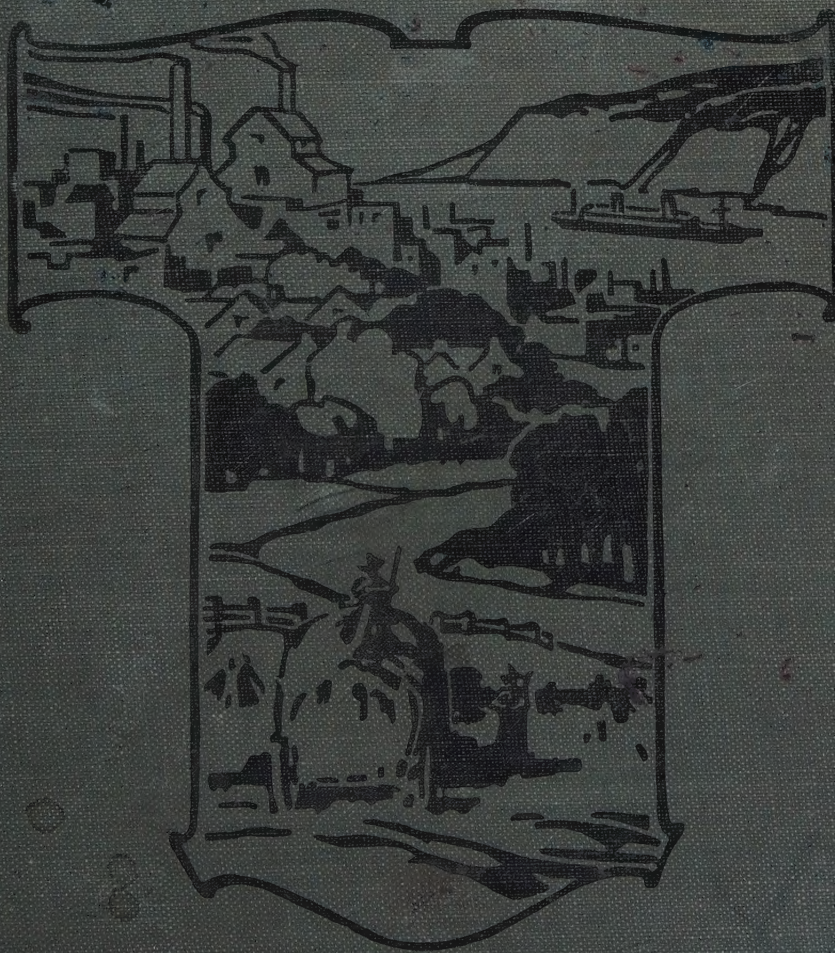


# CHOOSING AN OCCUPATION



VOCATIONAL CIVICS





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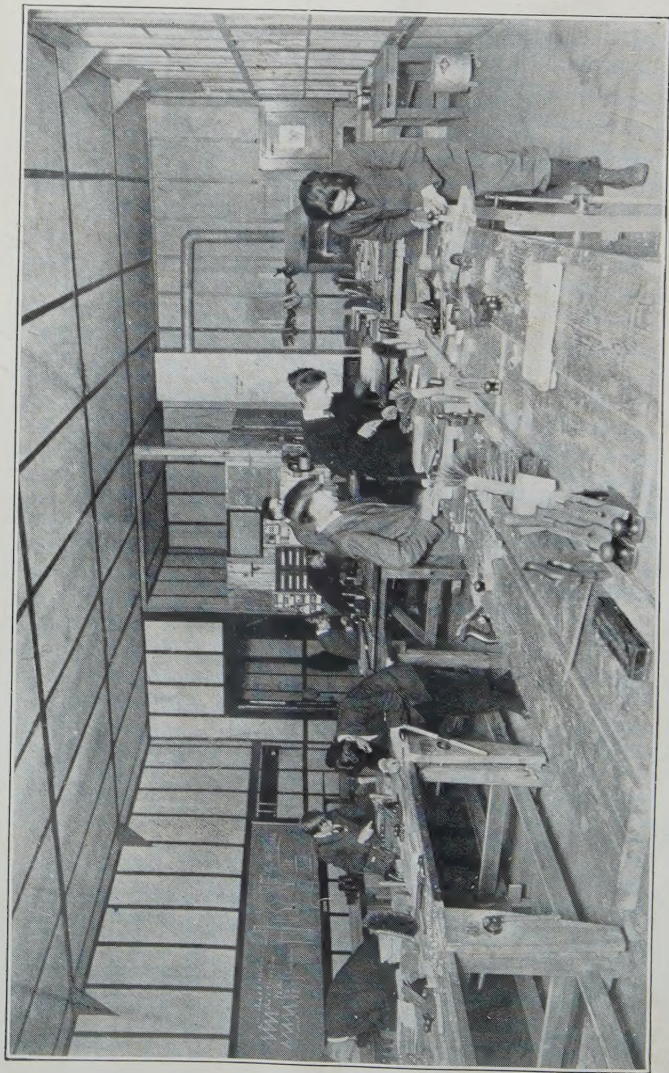












LEARNING A VOCATION  
A public school class in carpentry

# CHOOSING AN OCCUPATION

## VOCATIONAL CIVICS

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## PREFACE

If it is granted that one of the purposes of education is to prepare pupils to earn a living, it must also be granted that the pupils should know something about the different ways of earning a living. As children go about in their homes and among their neighbors, they will absorb something of a knowledge of occupations. They will incidentally acquire additional information in their school work—reading, English, science, and mathematics. But the general trend of educational leadership today seems to demand that some time be set aside, in the course of the school work, for a general survey of occupations. This book is designed to meet such a demand in the schools.

Because of the simple, easy vocabulary, it is hoped that this text can be used with profit by the younger pupils. In the discussion of each occupation certain historical and biographical material has been introduced in the hope that the interest of the pupil will be aroused, and that, as a result of this interest, the pupil will be stimulated to further reading and research.

The discussions on the various occupations are not complete, exhaustive, or encyclopedic, nor was it intended by the authors to make them so. The purpose of the book will be achieved if both pupils and teachers are led to give careful and intelligent thought to this most important problem.

THE AUTHORS.



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## TEACHING ABOUT VOCATIONS

Of course the teacher of vocations, or the vocational adviser, does not attempt to teach the pupil any particular occupation. This is the function of the teacher of certain special branches, as Drawing, Stenography, Typewriting; or the teacher in the trade school. It is the duty of the teacher of vocations to lead the pupil from one occupation to another, showing him the nature of the occupation, its advantages and its disadvantages, its economic and its noneconomic rewards. The teacher should encourage discussion on such points as the requirements of the learner, the needs of the community, and the opportunities for advancement. The teacher may ascertain the aims and the desires of such pupils as have already selected some occupation and make these the basis for further discussion.

The teacher of vocations and the vocational adviser have a splendid opportunity to point out constantly the joy and the rewards that come from genuine social service in a vocation. A great Teacher, many years ago, emphasized the attainment of mastery by the road of service. In the discussion of each occupation, then, the point of view of service to humanity as a means for the achievement of a well-rounded, self-respecting life should be stressed. As a corollary to this, the teacher should bring out the point that work itself can make for joy and happiness. Perhaps one

of the greatest troubles with workers today is the habit of looking inward and of worrying about themselves. If the teachers of vocations and the vocational counselors can lead the future worker to look outward toward his fellow men, and to see his work as a thing worth while, perhaps the workers of the future will feel more strongly this joy of work.

This particular book should be used open on the desk before the pupil. There should be a careful correlation with the work in Mathematics, Science, and English. Problems for the arithmetic class and themes for the English class will be found in abundance in the course of this work. Below are listed a number of methods and activities that may be found helpful to the teacher.

1. Encourage discussion in class. It is not necessary that all the pupils be found in agreement on the various points of the discussion, nor that the pupils agree with the teacher. Indeed, disagreements and arguments should be encouraged.

2. Call for reports on interviews with people in the various vocations. These reports should include reasons for choosing the occupation, how the occupation pleases the worker, whether the worker would like to enter some other occupation, what the worker thinks of the chances for advancement in his line of work, etc.

3. Require biographical readings and reports whenever possible—stories from the lives of different kinds of workers.

4. Require reports from the experience of the pupils themselves. Lead them to express preferences and to give reasons for such preferences. Discuss the reasons

advanced from various angles—ethical, economic, and social.

5. Collect and have the pupils collect historical material. Such material stimulates the interest of the pupil in various ways and is always desirable to have on hand for future classes.

6. From time to time have regular debates arranged. In the seventh or eighth grades the questions for debate may be very simple; such as, "Resolved, that the farmer performs a greater public service than the railroad man"; or, "Resolved, that the work of the miner is of greater value to the community than the work of the mason." Any number of such questions will suggest themselves.

7. Have the pupils collect, classify, and file newspaper clippings and magazine articles. Some of the magazines, as *The American Magazine*, contain important biographical material for this work in almost every issue.

8. Arrange visits with the class to various plants, building operations, farms, etc. Many of the leaders of industry are very willing to coöperate with the teacher in this work, and it will be found that the interest of the pupils is aroused to a high degree.

These class activities are suggested merely. The alert teacher will doubtless think of many additional activities for herself and for the class.





## CHAPTER I

### WHY GO TO SCHOOL?

**Education an Investment.**—A class of boys and girls was asked this question: "Why do you come to school?" One member answered, "To get an education." Another said, "To be prepared for our life work." A third replied, "We come to school to become better citizens." Do you think that these answers were good ones?

Of course, the years we spend in school are of value to us later. We should consider them as an investment. A business man buys an interest in a business with the idea that it will bring him a return in the money it will earn. A professional man saves a thousand dollars with which he buys shares of stock or a bond. The stock pays dividends or the bond pays interest every year. In a similar way, an education is an investment that pays dividends—the best investment a young person can make.

What returns can we expect from such an investment? This is the question that the boys and girls in the class tried to answer. Each one who replied gave part of the answer, for education helps us to acquire four things of untold worth. These we will call knowledge, skill, appreciation, and character.

**What Knowledge Is.**—Long ago, people thought that education merely meant the learning of facts. The more information a man had, the better educated he

was thought to be. Some of you will remember that, in China, government officials were formerly chosen on the basis of their ability to repeat page after page of very ancient books. This kind of information had nothing to do with their duties as government officials, and the method of appointment was one reason for the weakness of the Chinese government.

A knowledge of a number of facts is of value only if these facts can be made useful. Whenever we use judgment in making a decision we use facts that have been learned either through experience or in school. Some people buy automobiles that are good looking and do not consider the quality of workmanship. Others, who use judgment, learn facts concerning the workmanship and other good and bad qualities of several cars before deciding which make of car to buy. It is the latter who generally have the better cars. They have not only learned facts but they have also used them in the selection of their cars.

**Why Acquire Skill in School?**—A person who can plough a straight furrow or sew a neat seam is said to be skilful. In school, manual training, sewing, agriculture, drawing, and other kinds of handwork develop skill. This skill is useful in several ways. It helps in learning facts from books, and it develops appreciation. It is useful in selecting an occupation and may be useful in later years in the occupation itself.

You may wonder how handwork that develops skill will help in your book studies. If you read a book on how to care for bees you may understand it even if you have never raised bees. But if you have raised bees

before reading the book, you will not only find the facts more useful, but you will remember them longer. If you have measured out the things used in baking a cake you will easily work problems dealing with the measuring of flour. Handwork of any kind helps in the learning and remembering of facts.



HARVEST TIME IN THE SCHOOL GARDEN  
The real fun comes when the vegetables ripen

Often boys and girls select occupations that require nearly the same kind of skill that they have acquired in school. One boy will like woodwork and will decide to become a carpenter; another will like fine, accurate metal work and will become a dental mechanic. A girl who likes to care for children may become a nurse. The skill acquired in school not only helps the pupil in selecting an occupation but also helps

directly in his preparation. More will be said about this later.

**What Appreciation Is.**—You have read that skill develops appreciation. After a girl learns to make dresses, she looks carefully at the workmanship of dresses she buys. She enjoys seeing fine workmanship,



*Photo. Coleman's Studio, Montgomery, Ala.*

#### A SEWING CLASS

A working knowledge of designing, cutting, and sewing helps a girl to be better dressed

or as we say, she has developed an appreciation for it.

Appreciation can be developed in other ways. In school you learn to sing songs written to music by the finest composers. It is probable that you will enjoy these songs for the rest of your life and if you learn to enjoy fine music through study or practice, you will appreciate it enough to spend many of your spare hours listening to music or playing some instrument.



School drawing develops an appreciation of art. The French spend a great deal of time in teaching children in primary schools to draw. Children seven and eight years old are able to make fine sketches of birds and animals from memory. This training is continued through school and as a result the French are noted for their appreciation of art.

Many of the books you read in school start you to reading others by the same authors and gradually you develop an appreciation of fine literature. Read "Treasure Island" and you will continue to read and enjoy Stevenson's books. If you read Dickens' "Tale of Two Cities" you will probably read some of his other books and also start to read French history.

Other kinds of appreciation can also be developed in school. You are already asking yourself why it is so important to train for appreciation. It would not be if all of us had no leisure time, but most of us have a few hours each day in which we can do as we please. If in school we have learned to appreciate music, or art, or books, we can really enjoy our leisure time. It is probable that within the next few years working hours will be cut down because the work done by machinery will increase. For this reason you should, while in school, develop appreciation that will enable you to enjoy your spare time.

**Character Is Developed in School.**—An education that is complete develops men and women of good character. In fact, education, training, and unusual ability may all make a man only the more dangerous to society. Benedict Arnold was a well-educated man

who, after having shown himself to be a brave soldier, attempted to surrender West Point during the Revolution. If Benedict Arnold's education had included the right kind of character training he would not have turned traitor to his country.

Character can be developed in school through loyalty



*Courtesy Eastman Kodak Co.*

#### A TENSE MOMENT

Football is one of the best games to develop character and excellent work. When you are doing everything you can to help your school team to win fairly you are developing character. Honest athletics are fine helps in character developing but there is still a better way to develop character in school. You all know some students who do just enough work to pass their examinations who could do better work. There are others who may not be so capable who are always doing their best. It is the ones who

do the best work they can who are really developing character.

**School Does Prepare for Life Work.**—You will remember that one of the students mentioned in the first paragraph told the visitor that he went to school to get training for his life work. This is true but he was thinking only of the skill in shop work, or type-



A MODERN CITY GRADE SCHOOL

Huge sums of money have been spent to give boys and girls a better chance in the world

writing, or sewing that is gained in school. If skill were all that is needed, many of the short courses given by private trade and business schools would be sufficient preparation.

Naturally these schools make it appear that their courses are all that is necessary to prepare for successful work. The advertisements of trade schools and business colleges that give courses lasting from thirty to sixty days tell about only the few who have succeeded.

They do not say anything about the large numbers of their students who never make any use of their training. Many of these schools advertise to get the student's money and do not care what he learns nor what he does after leaving school.

Some short courses may be all right, but they are best for older students who have had considerable experience at the trade they want to learn. For example, a short course in photography might be helpful to a boy who has spent a year or two helping a photographer. If this same course were taken by a boy who had left the eighth grade, what he would learn would not help him much in photography.

Some short courses advertised in magazines and newspapers are downright worthless. The business college that guarantees to teach stenography and typewriting in thirty days, the music school that offers a complete course in five lessons, the school that offers to make you a scenario writer or movie actor in a few weeks, and schools for detectives are among the worst of them, but there are many others. If you are considering any private school, it is a good plan to get the advice of your teacher before leaving the public school.

Many students want to leave school because they can get jobs that do not require an education. Often it will be found that such jobs are "blind alley jobs," or jobs that do not lead to anything better. Carrying messages, stripping tobacco, and shelling nuts are considered to be blind alley jobs. If you must leave school and work of this kind is all you can get, your best plan will be to prepare yourself for some other

work as soon as you can. You can do this by going to night school or by studying at home in the evenings.

**Success and Education.**—Every once in a while some one points out a successful man with the remark that he never had much education. What is meant is that this man never attended school for any length of time, but if you will inquire you will find that he secured his education by study after he left school. Ask such a man for his advice and he will almost always advise you to stay in school. You will also notice that if he has any children, he takes care to see that they stay in school.

Many boys and girls leave school because they want to earn money, either to help their parents or to have a supply of spending money. The average person who completes a high school course soon overtakes the one who has left school earlier to go to work. Some time ago the government investigated this and found that those who graduate from high school earn as much during the first seven years as those who quit at the end of the eighth grade earn in their first eleven years. Beyond the seventh year the high school graduates leave the others far behind in their earning capacity.

**Education for Citizenship.**—This far we have been considering what education does to help us. Now let us see what is expected of us after we secure an education. The student may have had this in mind when he said that he went to school to become a better citizen.

Because the state spends a great deal of money to provide public schools, it expects you to pay for your



education by growing up to be good citizens. To be good citizens you must know your home community, your state, and the national government. In school you can learn such things as how taxes are levied and collected, how county officers are elected or appointed, and learn about other customs that have become laws.



TRANSPORTING SCHOOL CHILDREN

Some of the school districts, which have the consolidated schools, use automobiles to take the boys and girls to and from school

All these facts should be learned in school. However, in order to be a good citizen you must continue your education after you leave school. You can do this by reading but you will learn many interesting things about the political life of your community that you will not find in books. Your school books will tell you what qualifications a state senator, for example, must have, but it is only by working for the election

of the best candidate that you do your part as a good citizen.

The time may come when you will think you can do good work in a public office. You will find that if you are experienced in the political methods of your community and if you are the right kind of leader, you will have a chance to be elected.

There are other ways in which we may show that we are good citizens. In every school there are questions of right and wrong that are answered, not by rules, but by the right or wrong thinking of the pupils. Cheating in examinations, for example, is unfair to the pupils who do not cheat. It is unfair to the teacher and to the school. But it hurts the cheater more than anyone else because it develops the habit of cheating, and the chances are that he will go on cheating through life. Of course he will be found out, but he will be an evil influence in every community he belongs to.

The way in which the pupils in a school generally regard such questions may be called the public opinion of the school on these questions. If they think it is all right to cheat, the public opinion of the school is unhealthy. If cheating is frowned upon, it means not only a healthy state of public opinion in the school, but a hopeful future for the entire community. So also in a family, a club, a church, a town, a city, a state, or a nation, the public opinion, or, in other words, the group thought and feeling, is either healthy or unhealthy. In the town, the city, the state, and the nation, public opinion makes laws. Every citizen helps to make

public opinion. The more he helps to improve it, the better citizen he is.

**Education Never Ends.**-- Although our life in school prepares us for many activities, it is merely the beginning of our education. We continue to acquire knowledge, skill, and appreciation through our reading, through contacts with our fellow men, through travel and observation, through thought and discussion. Every experience in life really contributes to our education if we choose. As long as we live, we try to strengthen good habits and do away with bad ones. The old story tells of the two beautiful women who appeared before Hercules and proposed to guide him along the path of the future. The one offered him the path of pleasure, but the end of the path was hidden by mists and swamps. The other offered him the path of duty, a rough and rocky path, but the end was in the clear sunlight of the mountain tops. Every boy and girl has the choice of these two paths. Choosing the one, life becomes at first an easy, idle journey, which ends in stagnation. Choosing the other, life may seem a little more difficult at first, but the boy or girl continues to grow stronger and more necessary to his community.

### THINGS FOR PUPILS TO DO

**Questions for discussion in class.**

Which of your school studies do you like best? Can you give reasons for liking it best?

What studies do you like least? What are the reasons for this dislike?

What kinds of books do you like to read? Name some books of history and science, besides your school books, that you have read.

Have you ever examined the "National Geographic Magazine"? the "Popular Mechanics"? the "Popular Science Monthly"?

Are the things a Boy Scout or a Camp Fire Girl learns important? Discuss why boys and girls who dislike school sometimes like Scout or Camp Fire activities.

Does your father take any magazine that has to do with his work? Do you like to read it?

Problems to be studied outside of class.

Make a list of men or women about whom you have read in history or fiction. Select one whose character you admire and tell why you admire this person.

Select another whose character you do not admire, and tell why you do not.

Take some newspaper or magazine and examine the small advertisements offering to teach you how to do splendid things in a few lessons. Mark those you think are good, and those you think are poor. Talk over your decisions with your father or your teacher.

A State Superintendent of Schools once figured out that each day spent in school from kindergarten to university was worth \$10.00 to the pupil. At that rate, figure out how rich you are now; how rich you will be at the end of your high school course. Can you afford to go to work for \$5.00 a week? Can you afford to miss many days?

Consider two men who are doing the same work, one much better schooled than the other. Now state which should be the better citizen and give all the reasons you can for your answer.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

*Sandwich and Masters—Thirteen Days.* How boys can learn by studying and observing in their work and play.

**Other Books.**

**YOUR BIGGEST JOB. SCHOOL OR BUSINESS.**—*Henry L. Smith.* Explains various reasons why young people should remain in school.

**PREPARING FOR THE WORLD'S WORK.**—*Isaac Douglass.* Explains what the schools do for you and why they are helpful.

**COMMUNITY CIVICS.**—*Grace Turkington.* The chapter on the schools is very helpful.

**OUR COMMUNITY.**—*Maple and Jacques.* The chapter on schools gives some of the advantages of staying in school.



## CHAPTER II

### HOW TO CHOOSE YOUR VOCATION

**What "Vocation" Means.** Two hundred years ago there was not the chance to choose an occupation that you have today. Most boys learned the trades at which their fathers worked and most girls became housewives as their mothers had done. If the father was a doctor, the son "read" medicine in his father's office and learned to practice medicine by visiting the sick with his father. The boy whose father was a miner generally became a miner. If the father happened to be a tenant farmer, his sons became tenant farmers.

Once in a while, however, a young man felt such a strong desire to enter a certain occupation that it was said that he had a "call" to do this work and his occupation was known as his calling. Nowadays the word calling, or more often, the word vocation (from the Latin *voco* - I call) is used to mean any occupation.

**Few Choose Their Occupations.** If you will ask several of your older acquaintances who are employed, how they happen to be doing what they are, you will get some interesting answers. You will find that most of them took the best jobs that they could get when they were ready to go to work. Those who were raised on farms became farmers, if farming was the most profitable work to be had. Many who were raised in the city took the first job they learned about and stuck pretty closely to that kind of work. Others whose

## 16 HOW TO CHOOSE YOUR VOCATION

parents sent them to school to learn certain occupations, worked at those occupations. Very few, you will find, deliberately chose their occupations.

You will find in every community that most people



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### BALING HAY BY MACHINERY

Modern devices have greatly lightened the work on the farm

are contented with their work, even though they may not always admit it. Some few have been able to work their way up to positions of responsibility and among these will be found men and women who have grown to like their work and also the small group of persons who have carefully chosen their occupations. You will also find some who are not fitted for the work they are

doing and such persons are usually unhappy, and unsuccessful, too.

The purpose of this book is to help you to choose the right occupation. Of course if you do choose the wrong occupation you may be able to change later. You have read and enjoyed "Treasure Island." Stevenson's father wanted him to become an engineer. After studying engineering for a while he studied law, only to give it up to become an author. He might have become a moderately successful engineer or lawyer, but if he had, think what delightful reading we should have missed!

Unlike Stevenson, most of you cannot afford to spend the time and money to prepare for more than one occupation and for this reason you should make a careful choice. In considering each occupation it is well to keep in mind these questions:

1. Do you like that kind of work?
2. Are you physically and mentally fit for it?
3. Have you the time and money to prepare for it?
4. Is there enough demand for this kind of work?
5. Can you make a good living at it?
6. Does it give you an opportunity to be of service to your fellow men?

Each of these questions will be discussed separately.

**1. Do You Like That Kind of Work?** You can learn this only by knowing considerable about the work. When Benjamin Franklin was ready to learn a trade, his father took him to visit several places where men were at work so that he would be able to make a choice of his occupation. This method is excellent but there are so many occupations to choose from nowadays that

it would take a long time to observe men working at any great number of them.

Some of you may like certain kinds of handwork in school and decide upon a similar occupation. Many boys and girls have found that they liked typewriting



*Courtesy Reading Company*

#### THE LOCOMOTIVE ENGINEER

He must be a keen judge of color in signals

and stenography in school and later have secured positions in offices. This method of choosing an occupation has its disadvantages too because so few occupations can be included in a school course.

The other method of learning whether you like a certain occupation is by discussing it with your friends

or by reading about it in books. In the later chapters of this book you will find descriptions of occupations that will help you to choose the one you like.

**2. Are You Physically and Mentally Fit for the Occupation?** It is well to know if you have any physical defects that will prevent you from doing certain kinds of work. A boy who is color blind cannot learn to become a locomotive engineer. A girl who is not

good at matching colors cannot get work as a salesgirl at the thread counter in a dry-goods store. A weak heart prevents one from doing any work that requires heavy lifting.

Other kinds of work are suitable only for persons who have very robust constitutions. The doctor, the actor, and the nurse have to keep such irregular hours that only strong persons can stand such work as they do.

Acting is a profession that requires not only physical fitness, but also certain mental ability. Success in such professions as acting, painting, and the musical professions is possible only for persons who possess special talent. Your teacher, who can best advise you concerning these professions, will be able to tell you if you have a chance to succeed in one of them.

**3. Have You the Time and Money for Preparation?** Some kinds of work can be learned in a short time. It is seldom that a machine operator spends as much as six months learning to do his work. Other trades such as carpentering, bricklaying, and plastering require considerably longer. The locomotive engineer must work for several years as a fireman before he has his own "run." In considering any occupation you should find out whether you can afford to take the time necessary to learn it.

A great deal of money is required to prepare for some occupations. For example, to become a doctor a person must, after finishing high school, spend four years in a medical school. This is followed by a year of apprenticeship as an interne in a hospital, and after this, several years elapse before the average doctor has a



paying practice. The cost of studying medicine is so great that there is a shortage of good doctors. There are few professions in which you can be of more service to your community than in medicine but you must consider carefully the cost in time and money if you are thinking about becoming a doctor.

**4. The Demand for the Work.** In studying an occupation the opportunity for securing employment is to be considered. Some of the occupations are so crowded, and the demand of young people for positions is so great, that the wages are very low. This is especially true of the so-called "white collar jobs." The young man enters one of these occupations, hoping to be promoted to a managership. Then, when he is disappointed, he lacks courage, or he finds that it is too late, to learn something else.

Stenography is one of the occupations that is overcrowded. Many stenographers leave their work each year to get married and others take their places. But in spite of this only a part of the large number of stenographers trained by the schools can secure positions.

However, the boy or girl who chooses an occupation in which the demand for workers is light must determine to become the best possible worker in a particular line. The agricultural graduate who specializes in plant pathology or dairying can usually get work. Later he has the opportunity to make his services valuable by becoming an expert.

If a stenographer has a good supply of general information, and can use the English language correctly, she can always secure work. If she learns, as



part of her duties, to take care of details, and proves reliable, promotion is rapid, because such stenographers are rare. There is a demand in any occupation, no matter how much crowded, for the exceptionally well prepared worker.



*Courtesy Michigan Agricultural College*

#### A GREAT STATE AGRICULTURAL COLLEGE

Even a short course at such an institution will pay big dividends

#### 5. Can You Make a Living at the Occupation?

When a contractor wants laborers to build a road he usually goes to an employment agency or advertises for them. If there are plenty of laborers out of work he pays low wages, but if there are none out of work, he must pay enough to get men to quit other jobs and come to work for him. It is the same in other kinds of work. Whether a person can make a good living or

## 22 HOW TO CHOOSE YOUR VOCATION

not depends upon how many qualified persons in that vocation are looking for employment.

It isn't difficult to tell whether there is an oversupply of workers in any one vocation, but it is another matter to judge whether a person can spend a lifetime at it. Engravers earn big wages and so do machine knitters, but the work is hard on the eyes and workers can spend but a few years at these trades.

Sometimes occupations disappear. Furniture used to be made by cabinetmakers but nowadays most of it is made by machinery. When power looms were first used in England so many hand weavers were thrown out of work that they tried to destroy the power looms. Now that machinery is being used to make practically all our shoes it would hardly be advisable to learn to make shoes by hand.

New laws may affect workers in certain occupations. When the prohibition law was passed practically all distillery workers had to get other kinds of work. Workmen's compensation laws have taken so much work away from lawyers that many men who have studied law are to be found in the real estate and other businesses. Formerly if a man was injured at work it was necessary for him to get a lawyer to look after his interests. Where there is a compensation law the amount paid for injuries is decided by a person called a referee.

If you are determined to take up an occupation in which there is a surplus of workers your best chance is in work that requires special ability. For instance, the cabinetmaker who knows something about design

can get work at making samples, while the hand shoemaker who is a very fine workman can get employment making shoes for persons who cannot wear the ordinary shoes. The law student can become an expert on income tax and create a demand for his services. It is the same in these as in all other vocations. There



THE CUSTOM SHOEMAKER

Many people must have their shoes made to order and a really good workman has an excellent opportunity

is room for the person who can do something unusually well.

**6. Does the Vocation Give You an Opportunity to Be of Service to Your Fellow Men?** After you have considered all the other questions this is the one that should really determine your choice. You may never get rich if you work at a machine that makes shoes or weaves clothes, or if you help to build houses, or if you teach, or heal the sick, but in each of these occupations you will have the satisfaction of knowing that you are

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doing something worth while. If it is your ambition to become famous, remember that the men and women who are remembered longest are the ones who have done the most for others, and that very few rich men are included among them.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

Have you a box of tools? Do you like to make things out of tin, wood, or leather?

If you have a garden, what part of the work in it do you like best? What part do you dislike most?

Suppose a man should lose a leg or an arm, what could he do for a living?

A person has had a severe illness and is now weak and pale. Suggest methods for this person to work for a living in such a way as to recover his health.

What is the matter with the person who says, "I will not work. The world owes me a living"?

What is the best paid work in your town? How old is the youngest man you know engaged in this work?

What is the poorest paid job in your town?

Which do you prefer—working in a factory for \$6.00 a week and board yourself, or working in a private home at \$5.00 a week, room and board added? Give reasons for answer.

Of all the persons you know, who do you think is doing most to help other people?

Problems to be studied outside of class.

Make a list of the occupations you think you would like.

Make a list of trades or occupations you dislike.

If you know any blind persons, find out how they earn a living.

### BOOKS FOR PUPILS TO READ

These Books Are Mostly Biographical

AUTOBIOGRAPHY OF BENJAMIN FRANKLIN.—An early American boy and his struggles.

THE AMERICANIZATION OF EDWARD BOK.—A Dutch boy who made good in America. This is also an autobiography.

BOYS' LIFE OF THOMAS A. EDISON.—*William H. Meadowcroft*. The story of a great American and of his achievements.

BOYHOOD OF LINCOLN.—*Eleanor Atkinson*. A boy who rose above great handicaps and made good.

LIFE OF CLARA BARTON.—*Percy H. Epler*. An American woman whose life work it was to organize relief.

FLORENCE NIGHTINGALE.—*Laura E. Richards*. A great English woman who practically created a new profession for women.

HEROINES EVERY CHILD SHOULD KNOW.—*Mabie and Stephens*. Women of all lands and all ages whose work benefited the race.

THE AMERICAN SPIRIT.—*Monroe and Miller*. A Basis for World Democracy. Quotations from the writings of eminent Americans.

THE SPIRIT OF YOUTH.—*Jane Addams*. Discussion of the industrial, economic, and social problems of young people in cities.

LIVES OF POOR BOYS WHO BECAME FAMOUS.—*Sarah K. Bolton*. These were boys from many lands—America, England, France, and others—who made good.

THE WONDER WORKERS.—*Mary H. Wade*. Men who achieved things their neighbors thought impossible.

CONQUESTS OF INVENTION.—*Mary R. Parkman*. Some of the great inventions and their benefits to humanity.



## CHAPTER III

### PREPARING FOR A VOCATION

**The Purpose of This Chapter.**—If you happen to be thinking about sign painting as a vocation, you might ask several sign painters how they learned their trade. One may tell you that he worked in a sign painting shop while going to school and afterwards got a steady job there. Another may have learned house painting and may later have taken a course in lettering. Sometimes women do work of this kind for a living. Many posters and artistic signs such as you see in front of tea rooms have been painted by women who got their training in art school.

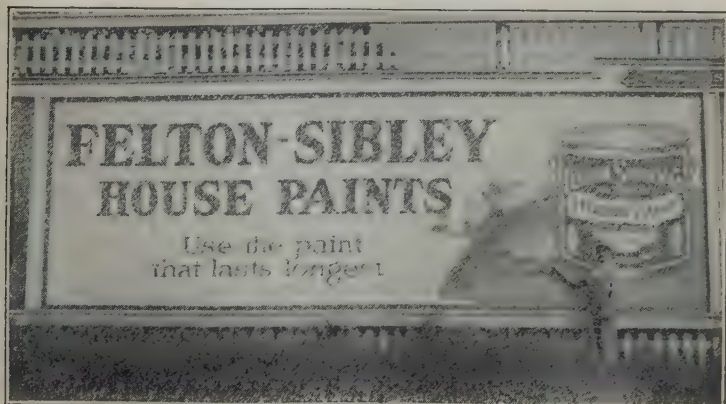
Many occupations are like sign painting in that there are several ways to prepare for each of them. In this chapter we shall discuss different ways of getting such preparation, but, first, we shall see how your elementary and high school studies, such as English or mathematics, can be used in preparing for a vocation.

Suppose we consider the work of the sign painter again. He must know how to spell and what correct English is, because people always notice mistakes on signs. When a man wants a sign made, the painter must be able to talk well in order to describe a sign before the customer sees it. If the sign is a reproduction of an old one, such as were used on colonial hotels, a picture is perhaps to be used as well as the name of



the hotel. Here a knowledge of history is useful. In colonial days very few travelers could read but they could remember the picture on a sign. Some of these old signs with a picture of a bear, or an eagle, or a ship, are still to be seen in Pennsylvania.

The sign painter uses mathematics in estimating the cost of a sign and in laying out the letters. His training



*Courtesy Thos. Cusack Co.*

#### THE SIGN PAINTER AT WORK

Few occupations require as many different kinds of knowledge as that of the sign painter

in hygiene is useful if he wants to avoid diseases that persons who handle paint are likely to get. A knowledge of chemistry is helpful in the mixing of paint. Even a knowledge of one or two foreign languages is helpful, for signs are made in foreign languages as well as in English.

These studies help the sign painter but they are just as helpful in other occupations. Perhaps drawing is the most useful of the general studies he has had in

school, but let us see if drawing is not useful in other occupations.

**Drawing.**—Not everyone needs to know how to make drawings, but the construction trades all require some drawings. Machinery is made from drawings.



*Courtesy Link Belt Co., Chicago*

**DRAFTING ROOM OF A GREAT MANUFACTURING PLANT**

Mechanical drawings for new machinery are prepared here

Houses are built from plans, and the stonecutter often works from a sketch.

Drawings that are made with instruments and ruling devices are known as mechanical drawings. These are the ones generally used in the building and machine and shipyard trades. For most trades freehand drawing is valuable because often much time can be saved in discussing something if a sketch can be made. Free-

hand drawing also helps a person to see things more clearly. This is what the person, who said that the best microscope is a lead pencil, had in mind. So important is this that students who are learning to design dresses or houses or furniture spend the greater part of their time copying beautiful specimens.

**The Practical Use of English.**--You will recall that in former days a young man who studied medicine was said to "read medicine." Even now we say that law students "read law." The person who can read intelligently all the books and magazines dealing with his occupation has one of the most valuable tools he can possess.

The ability to describe things accurately or to give directions so that they can be understood can be developed by studying English. Training in public speaking is excellent preparation for most occupations. During the World War it was found that actors made good army officers because they were able to speak clearly and give commands so that they could be understood.

When you apply for your first job you may have to fill out an application blank or write a letter of application. If there are several others who are as well qualified as you are and who want the job, it is likely to be given to the one who has filled out the blank most clearly or who has written the best letter of application. For this work spelling and English composition are very necessary.

**Mathematics.**--It isn't hard to think of some practical uses of mathematics. Money must be counted

and wages figured. Whenever you make a purchase or sell anything you use arithmetic. Many occupations require a knowledge of high school or even college mathematics. For instance, geometry and trigonometry are used by the carpenter, the machinist, the surveyor, and many others. In order to work problems in geometry and trigonometry you must be able to use algebra.

The engineer, the architect, and the accountant all use the higher mathematics that are studied in college. It is impossible to study college mathematics without a knowledge of elementary and high school mathematics.

**History and Geography.**—Among other things, history teaches us that there are times when business is good, work is easy to secure, and prices are not low. Then, again, there are times when many are out of work, and wages and prices are lower. Good times or bad times depend upon a number of things such as a war, or a coming election. The person who has studied history, and is able thereby to foresee dull times, saves his money so that he can spend it when prices are lower. If he wants to build a home it may pay him to wait until wages come down.

Geography is as helpful as history. In fact if you know what the geography of a certain part of the country is you can tell what most of the occupations are in that section. Where cotton is manufactured we find cotton mill hands, and where iron ore and coal are found close together, we can expect to find people working in iron and steel mills. In spite of all that

can be said about the importance of choosing an occupation, most people work where they can easily get employment, and their employment generally depends upon the climate or the soil or the minerals of their community.

**Foreign Languages.**—The interpreter, the teacher of foreign languages, and the employees in exporting houses use foreign languages in their daily work. Few of us may ever need to speak a foreign language but it is well to know how to read books and magazines in foreign language if we wish to advance to the top in our work.



*Courtesy Philadelphia Y.M.C.A.*

**TRAINING ELECTRICIANS**

Instructor showing students how to test automobile generators

**Chemistry and Physics.** In many occupations such as those connected with the dyeing of cloth, manufacturing gas, and meat packing, a knowledge of chemistry is essential. Nearly all of us can use a knowledge of chemistry in our daily work. The laundress should know something about chemistry when she removes stains from clothing and so should the bricklayer who has to remove marks from brick.



A knowledge of physics is helpful to the person who has to move heavy objects or remove liquids with a siphon. If he knows the principles of the gas engine he can often make repairs to an automobile or truck. As we use more electricity, the study of electricity in physics becomes more helpful. Such machines as are found in clothing factories, machine shops, planing mills, and textile mills are often driven by electric motors. If you know how electricity works you can often prevent breakdowns or even make repairs.

**Another Use for These Studies.** Some practical uses of a number of school studies have just been named, but perhaps the most practical value of them is in the help they give you in studying after your vocational training begins or after you go to work. Take for example the case of the farmer who wants to know how to get rid of some plant disease. With a good general education he will be able to learn what has been done by others to fight this disease and he can do this when he understands what he is reading.

**How Vocations Are Learned.** Although a general education is of practical value in every occupation, it is usually not enough. You must learn many things about the occupation itself. Now how will you do it? If you want to become a locomotive engineer you can learn only by working for several years as a fireman. You learn to operate a steam shovel in the same way. You cannot prepare for these trades in school because so much expensive machinery is used. Neither can you learn these trades, nor several others, until you can do a man's work. Your best plan if you select such a

trade will be to stay in school until you can get a job as an apprentice or helper.

Your vocation may be one for which you have the choice of apprenticeship or school training. You can, for example, learn watch repairing by apprenticing yourself to a watchmaker or you can go to a school in which watchmaking is taught. If you can go to a public school to learn watchmaking, or a similar trade, by all means do it, but if you cannot, you should learn by working where you can get an all round experience. Some trades, such as watchmaking, undertaking, ship



*Courtesy Elgin Watch Co.*

#### A WATCH JEWEL SETTING MACHINE

Sixteen jewels a minute are placed in the works by this ingenious machine

drafting, are also taught in private schools, but you must be very careful in selecting such a school.

There are vocations that can hardly be learned except by taking a school course. The stenographer, the teacher, and the doctor, all get their training in school.

**Apprenticeship.**—Formerly, nearly everyone who chose a vocation that required training learned by

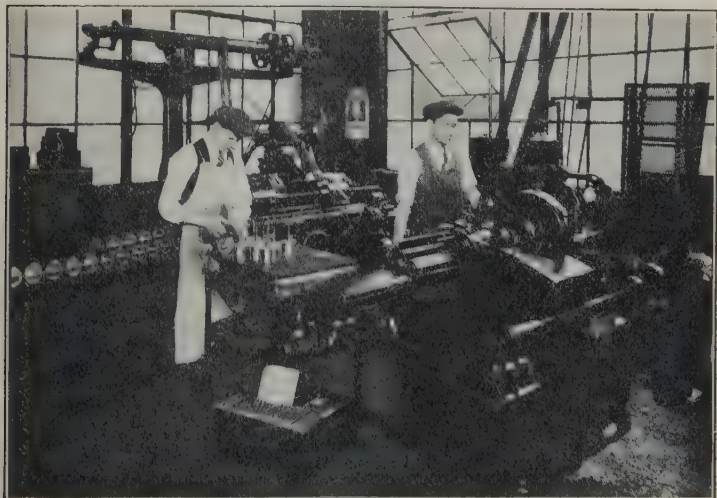
working under someone who was a master in his or her occupation. Apprenticeship has almost disappeared, as you can see if you will count your friends who are learning in this way. However, there still are places for apprentices. Many large corporations train apprentices in order to have enough skilled workmen in their own shops. Some of the trades commonly taught in this way are those of the machinist, draftsman, printer, patternmaker, and the sheet metal worker. Where the number of apprentices is large enough, they often go to a special school in the plant for a few hours each week.

If you want to serve an apprenticeship and cannot find a place that has a regular apprenticeship department, it is well to learn in a small shop. Be sure that the men or women under whom you learn are master workmen and also that they do a variety of work instead of one kind. For instance, if you want to become a butcher do not go to a large packing house to learn, but get a job with a small butcher who does all his own work. If you want to be an upholsterer, you should learn in a small shop, preferably one in which both new work and repairing are done.

**The Helper Method.**—You have been told how some vocations are learned "on the job." If you want to learn to be a blacksmith, you may have to wait until you are strong enough to work as a helper and learn the trade in this way. The helper generally is an older person who can do harder work than an apprentice, and he also gets more pay for it. The great trouble with the helper method of learning is this: an employer

pays a helper fair wages and keeps him at the work he can do best instead of giving him a chance to learn many things. A helper who learns to run a lathe in a machine shop often has no chance to learn to run other machines.

There are some good things to be said for the helper



*Courtesy Ohio Electric & Controller Co., Cincinnati*

#### THE HELPER

At the left the machinist is gauging the size of electric motor armatures while his helper operates the grinding machine

method of learning. Suppose you must leave school without learning a trade because you must help to support the family. If you are not old enough to get a job as a helper, do whatever you can to earn an honest living; then, when you have a chance, get a job as a helper. If you cannot do everything in the trade you can at least learn

something by watching others at work. During your spare time you can go to night school, or study at home, and in this way learn what you miss while at work.

**Preparing in School.**—When someone starts to talk about school vocational courses we usually think of public schools, or colleges in which professions are learned. We shall now discuss these and also other schools that give training for vocations.

If you have selected an occupation such as stenography or farming, and you can get training for one of these vocations in a public school, that is the place for you. Your parents pay taxes to keep these schools going. If you go to a private school to prepare for a vocation your parents are having a double expense, because no matter what school you attend, these taxes must be paid. Generally the public school courses are better than the private schools.

**High School Vocational Courses.**—Until the last few years, very few students could take vocational courses in high school. Most of them prepared for college although a few took a commercial course. Now, nearly all of the larger high schools and many of the smaller ones have vocational courses. There are courses in agriculture, business courses, household arts courses, and trade courses of many kinds.

You can get a general education while taking one of these courses. Perhaps you will not be as skilful when you first leave high school as boys and girls who have gone to work from the elementary school, but within a few years you should be able to overtake them



and your chances for promotion are much better on account of your better education.

**Public Trade Schools.**—If you cannot afford to spend four years in high school you may be able to take a trade course lasting for two or three years. The trade schools in our larger cities give training that is more practical than the high school courses, but you do not have as much of an opportunity to get a good general education.

**Coöperative Courses.**—How would you like to change from school to work and back every once in a while? That is what you do if you prepare for a vocation by taking a coöperative course. Such courses are given in high schools or trade schools and even in colleges and engineering schools. Here the students attend school for a while, then go to work for the same length of time, and keep changing in this way until the school course is completed and until they are prepared to go to work at full wages.

If you want to learn a trade in high school, or if you want to study engineering in this manner, you will make no mistake if you take a coöperative course. The training is very practical and you can earn part of your expenses as well. A coöperative student who does good work usually has a position waiting for him when he leaves school.

**Part-Time or Continuation Schools.**—In most of the states the law now requires young people, who leave school to go to work, to attend a part-time or continuation school for four, six, or eight hours a week. These hours are to be taken from their working hours. Many

of these schools have vocational courses similar to those given in trade schools. In all of them the teachers devote considerable time to guiding the young workers so that they may work themselves out of "blind alley" jobs into something better. This is the time "when a feller needs a friend." Absolutely the best job for an American boy or girl at least up to the age of sixteen years is to attend a full-time school. But if you are compelled to leave school and go to work, it is well to regard the continuation school not as a place which the law compels you to attend, but as a place to help you prepare for some better position than you are now able to find or to fill.

**Night Schools.**—If you cannot afford to remain in school you may be able to go to night school to complete your education, or, you may take a course that will help you in your daily work. Such night school courses as shop mathematics, drafting, millinery, or cooking all help the person who is employed during the day.

**Private Vocational Schools.**—What is a boy or a girl to do in case the high school or state university does not give a vocational course that is wanted? There are many private schools for vocational training. The most common are business schools. There are very few towns that do not have at least one "business college" and in the large cities there are private schools that prepare for other occupations. Candy making can be learned in such a school, and so can barbering. It is hard to think of a vocation that cannot be learned in some private school.

One must be very careful in choosing a private school.

For instance, there are schools that advertise thirty-day training in stenography, or plastering, or bricklaying. Others give longer courses that are good for persons with some experience but are useless to the beginner. Still other schools admit only high school graduates or older persons and give very thorough courses.

Here is an advertisement of one of the thirty-day schools:

“We qualify you as stenographer or bookkeeper in 30 days: position secured. 30-DAY BUSINESS COLLEGE.”

Notice that the statement “position secured” says nothing about the kind of position secured, nor does it state anything about how long the thirty-day graduate can hold a position. It is a waste of time for a boy or a girl to attend one of these schools, or any school that guarantees to teach a trade in four weeks.

Not all private school courses are like those of the thirty-day schools. A one-year course in a good business school gives excellent training in stenography or bookkeeping to the boy or girl who cannot afford to take a longer course. These courses are also good for the person who has been out of public school for a few years. Such a person usually does not want to return to high school.

Many private schools give short courses that are helpful to the person who has had some practical experience. A machinist or toolmaker can learn all he needs to know about automobile repairing by taking a three months' course. Many older persons learn enough about plastering, or tile setting, or bricklaying in two

or three months to get a start in these trades, but such schools are not for younger persons.

There are some private vocational schools that give free vocational training. These schools are generally supported by churches or by funds that have been left



*Courtesy Central Y. M. C. A., Phila.*

#### AN AUTOMOBILE TRADE SCHOOL

A class learning how to repair a caterpillar tractor

by some rich man or woman. If you are interested in attending such a school you can get a list of them in the nearest library from a school directory. When you have found a school that teaches the trade you want, write to the principal, asking how you can get in. These schools usually give good vocational courses because

they have enough money to buy good equipment and to secure good instructors.

**Correspondence Courses.** Many persons who are employed feel that they need more training and yet they cannot go to night school. A bricklayer may want to become a contractor, but may feel that he doesn't know enough about estimating. He can take a correspondence course that will teach him how to read plans and estimate the cost of brick work.

On the other hand, a farm hand may read a magazine containing an advertisement of a detective school and decide to become a detective. He takes the course only to find that he has nothing but a finely engraved diploma to show for his efforts. When he tries to get a job as a detective he learns that the diploma is worthless.

These are just two cases but they show that correspondence courses may be good or they may be worthless. There are three things to remember about correspondence schools. First, they are for older persons only. No one who is not grown up should attempt a correspondence course because it takes a lot of energy and persistence, as well, to study alone at night, unless there is someone to recte to the next day. The better education a person has, the more likely he is to succeed with correspondence study because his education helps him over the hard places.

The second point to remember is this: Unless a correspondence course deals with work a person has done, it won't do him or her much good. A farmer who has raised chickens can get a lot of help from a



course in chicken raising. The housewife can learn considerable by taking a correspondence course in cooking. But, for the farm hand, the course in detective training is useless. Probably he wouldn't do much better with a course in traffic management.



*Courtesy International Correspondence Schools, Scranton, Pa.*

#### A CORRESPONDENCE SCHOOL

Sorting students' mail in a well organized office

The third point is that although there are some good correspondence schools, there are many that should not be allowed to advertise. Some of the best correspondence courses are given by the state universities. If you have a friend who wants to take such a course,

tell your friend to write to the state university. If he cannot get the correspondence course there, he can learn where a good one can be taken.

The state universities charge very moderately for their correspondence courses, but where a person cannot get his course in this way, there are other correspondence schools. In reading their advertisements, remember that they tell only about the persons who succeeded after taking their courses. They never mention the others. It is a good idea, also, to read the contract of a correspondence school carefully before signing it. Some schools collect money for the entire course even though a person doesn't complete it.

Beware of the advertising schools that offer to train you to become a musician or a detective, or to train you for civil service employment by mail. The advertisements sound good but practically all of them are worthless. These schools succeed about as well as the character reader who offered to send a character reading to anyone who would send a lock of her hair. Some boys cut hair off a calf's back and sent it in. By return mail they received a character reading that sounded like what the fortune teller generally tells you!

When there is a choice between several short correspondence courses and one long one, the short ones should be taken. If you get tired of one of them you can stop and feel that at least you have done something well.

**College Courses.**—People go to college for the same reasons that they go to elementary and high schools, but in this chapter we are concerned only with the

college training that prepares for a vocation. Most of us think of college training that lasts for four years, but there are several kinds of college vocational courses.

Many boys and girls who live on farms cannot be spared from their work to take a full college course. For them the state colleges have short winter courses lasting a few months. There are other courses such as business courses or agricultural courses that last for two years.

The boy who wants to work in an agricultural experiment station, or who wishes to become a high school teacher or an engineer, should take the four-year course. The girl who takes a course to learn to be a dietitian in a hospital or a high school teacher usually attends college for four years.

Some kinds of training require longer than four years. Physicians and lawyers and college teachers usually study for two years or longer after completing the first four years' work.

**Continued Study.**—No matter how long you attend school or college your education is never complete. Such men as Benjamin Franklin, Theodore Roosevelt, and Woodrow Wilson continued their studies all their lives. If these men found study valuable, why shouldn't you keep on studying after you leave school?

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

Show how a knowledge of English helps in different trades and occupations.

Discuss the usefulness of arithmetic to the carpenter, the mason, and the farmer.

Talk over various occupations in which a knowledge of Spanish would be helpful.

In what occupations would a boy with a knowledge of hygiene have a better chance than a boy who knows nothing of this subject? How does hygiene help the girl who is going to be a home manager?

What are some of the problems of the farmer that the chemist can help to solve?

Problems to be studied outside of class.

Make a list of the things you are learning in your home that will help you to earn a living.

Make a list of the occupations that can be learned in the public schools of your community.

How do the business schools of your community come up to the requirements set forth in this chapter?

Make a list of the occupations in your town that were learned in college or in the university. Do these men enjoy a higher place in the esteem of the community than others?

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

STALKY & CO. *Rudyard Kipling*. The story of several English boys in school and their problems.

TOM BROWN'S SCHOOL DAYS. *Thomas Hughes*. Another English boy and his school problems. Both of these books are partly autobiographical.

### Other Books.

THE YOUNG MAN AND THE WORLD. — *A. J. Beveridge*. A series of articles appearing originally in the "Saturday Evening Post."

HEROES OF EVERYDAY LIFE. — *Fanny E. Coe*. Emphasizes the work of the people who look upon duty as the main thing in work.

HARPER'S OUTDOOR BOOK FOR BOYS. — Tells of many things that can be done by boys.

MEN WHO ARE MAKING AMERICA. — *B. C. Forbes*. Sketches of fifty of America's foremost men.

GEORGE WASHINGTON. *Vernon Hapgood*. An inspiring biography for young people.

## CHAPTER IV

### SUCCESS IN A VOCATION

**The Meaning of Success.**—If you were asked to pick out the successful people in your town, you would probably think of the men and women who have become rich or prominent. We seldom think of the mother who raises a family of useful boys and girls as being successful, but she certainly is. So is the farmer who works hard to save enough to live on when he is too old to farm. People who do housework, or who work at machines making bolts, or bricks, are successful too, providing they are doing each day the best work they can.

For successful work, education is useful, and so is training for our occupations. If this were all, success would be easy. But it doesn't always happen that the best educated person is the most successful. Neither is the most skilful workman always the most successful employee. This is because, if we are to be successful, we must have certain other qualities that are born in us or that we can develop through habit. One of the most valuable of these qualities is accuracy.

**The Habit of Accuracy.**—Edward H. Harriman, the capitalist, was once asked to name the traits he considered essential for an employee to have. He replied: "I shall name them in the order of their importance. They are, first, accuracy; second, more accuracy; and third, still more accuracy." Naturally accuracy is





*Courtesy Eastman Kodak Co.*

### BOY SCOUTS IN CAMP

This fine organization teaches boys the elements of success in life

needed where money is handled, but the habit of accuracy should be developed by everyone.

You can start to develop the habit of accuracy in school and later it will be easy for you to do accurate work. It isn't enough to be accurate once in a while, you must develop the habit of accuracy. A civil engineer who was carefully wrapping a package containing some books, was asked why he took so much pains. He replied: "I suppose it is a habit I have. You know a person has to be accurate to be a civil engineer."

**Energy and Success.**—You probably know boys who can work hard all day and play ball until dark. Some girls can do housework during the day, and always have energy enough to go to parties in the evening. There are others who do not feel like exerting themselves after a hard day's work. They usually prefer to sit around during the evening.

Not all persons have the same kind of energy. Some persons do not care to take much exercise, or do not have much physical energy, as we say. It may be that these same persons can stay up later at night studying. In that case we say that they have plenty of mental energy. If you are physically energetic you will doubtless succeed in a vocation that requires plenty of physical labor. Farming, mining, and nursing are some of the occupations that require a great deal of energy.

Some persons seem to lack physical energy. It may be due to unfavorable weather, or to some ailment. Then again it may be that they are naturally inactive, or that they are using too much energy attending parties or going to the movies.

Boys and girls who are growing fast cannot be expected to be very energetic, either in their studies or in their work at home. This period should soon be outgrown. Where a lack of energy is due to too little sleep the remedy is more sleep, and it must be secured at regular hours. Plenty of good food, at regular hours, also develops energy.

Many persons who become tired find that they can restore their energy changing their work instead of resting. The man who works in a shop all day gets a change by working in his garden in the evening. The farmer gets relaxation by going to the near-by city occasionally. Office workers renew their energy by playing tennis or baseball.

The boy and the girl who do not possess much physical energy need not feel discouraged. By carefully choosing their vocations they, too, can succeed. Mark Twain wrote *Tom Sawyer* and his other books while lying in bed. Robert Louis Stevenson was not able to work for more than a few hours each day on account of tuberculosis.

Sometimes it is possible to develop a weak body into a strong one. Read the story of Roosevelt's life and you will learn how hard he worked to overcome asthma and how, by plenty of exercise, he developed into a tremendously energetic person.

**Judgment.**—Often farmers sell their farms and move to a distant state. Some of them will try to farm as they did back home, but it is not long before they start to lose money. Others will first go to the community in which they expect to farm and work for a good

farmer. Later they bring their families and start to farm for themselves, but they are careful to raise the same crops that the good farmer is raising. We say that the farmers who first learn what can be raised, before they plant their crops, use judgment.

A few people seem to have natural good judgment in all their affairs, but most of us have to learn to use



*Photo. Eugene J. Hal*

#### DAIRY FARMING

Often land unfit for any other type of farming can be used profitably as a stock farm or dairy farm

judgment. If a boy keeps away from green apples because he has at one time eaten them and had a pain, his judgment is based on his own experience. If he has never eaten green apples because someone told him what would happen, his judgment is based on the experience of a friend. Or he may have read in a book on hygiene that green apples cause plenty of pains. In this case his judgment is based upon what he reads.

Here you have the ways by which you can develop judgment. You can get experience, but this method is generally quite expensive. You can get the advice of others or you can by study develop judgment. If you want to succeed you will find that it pays to study and to get the advice of older persons and to follow it.

**Initiative.** One farm hand will be sent out to work corn and when he is through he will wait to be told to do something else. Another will bring his cultivator in from the field, and if a new job is not ready for him, he will oil the cultivator and get it ready to use again. The person who knows what to do and does it without being told is said to have initiative.

Initiative is a quality that can be developed. If you have spare time during the day when you are not going to school, you should get a job of some kind. Here you will find a chance to use initiative. You will also be forming the habit of work. A boy or girl can develop initiative at home by helping with the housework or by taking care of the lawn.

**Cooperation.** A farmer who ships his produce to a near-by town usually sends it to a commission merchant who sells it for what he can get. After the merchant takes out his commission he sends the farmer a check for the rest. The farmer is at the mercy of the commission merchant because he has no way of knowing how much the produce actually brings. He has to take the merchant's word if he says that some of the produce was spoiled.

There is a way to overcome this evil. If the farmers in a community will cooperate they can employ some-



one to sell their things for them. In this way they succeed in getting more for their crops. Within the last few years farmers have learned much about cooperation. In many places they also cooperate to buy their fertilizer, their seed, or their farm implements.



*Photo. Keystone View Co., Inc.*

#### THE COMMISSION MERCHANT

The so-called middleman takes a heavy toll out of the farmer's profits

Coöperation is needed in all kinds of activities. When people want to build a new church they coöperate to raise the money. When they want a new street or road they coöperate and select someone to go to the city council or the state legislature to tell how much the improvement is needed.

You can develop the habit of coöperation in school. Your debating club, your singing society, and all athletic teams require coöperation or team work. By taking an active part in work with others you will be developing the habit of coöperation.

**Reliability.**— You can buy things from two kinds of stores. In the one store you may get cheap goods but you are taking a chance with the quality. In the other store prices may be somewhat higher but you can always depend upon the goods. We say that the store that can be depended upon is reliable.

As you know, success doesn't depend entirely upon the money you earn, but your services are just like the goods in the store. If they are dependable, that is, if you are reliable, they will be worth more to an employer and he will pay you more for your work.

We get pleasure in doing things right. It is the same way with being reliable. There is satisfaction in knowing that you are reliable, and this is just as valuable as money.

**These Qualities Must Become Habits.** We don't have to stop to think every time we tie our shoes or write our names. It is because these activities have become habits with us. Can you imagine how much you could do in a day if you had to learn over again how to do all these things that have become habits? Many of them just wouldn't be done.

It is the same way with the qualities we have been talking about. Unless they become habits they aren't worth much to us. There is a way that accuracy or reliability or other qualities can be made into habits.



*Courtesy John W. Macomber Photographs*

### THE COURT AND GRAND ORGAN OF A DEPARTMENT STORE

Many people prefer to deal with large department stores because of their liberal policy of guaranteeing satisfaction

Take accuracy, for instance. You can make it a habit by starting now to be accurate in your lessons. This sounds easy but it is not as easy as it sounds. Keep on being accurate—in other words, don't be accurate one day and careless the next. It will gradually become easier for you to do accurate work and when the time comes when you do accurate work without thinking about it, you have formed the habit of accuracy. This same rule will apply to many other qualities that you must develop in order to be successful.

## THINGS FOR PUPILS TO DO

Questions for discussion in class.

Talk over some of the occupations in which **ACCURACY** is essential. Would you like to deal with a druggist who is inaccurate? Why not?

What are some of the trades in which **ENERGY** is necessary? Would you like to have a carpenter working for you who possesses little energy?

Does the boy who leaves school to take a position when the father wants him to continue show good **JUDGMENT**?

Think of some boys or girls who are showing considerable **INITIATIVE**. In what ways do they show it?

Problems to be studied outside of class.

Have a talk with some business man who, in your opinion, has a great deal of initiative. Is he successful?

Discuss the question "Resolved, that initiative without judgment is better than judgment without initiative."

Make a list of the reasons why the energy of the people of one community may be greater than that of the people of another.

List the qualities discussed in the chapter in the order of their importance: for a pioneer settler; for a farmer; for a draftsman; for a bank clerk; for a traveling salesman.

## BOOKS FOR PUPILS TO READ

## Stories and Fiction.

UNGAVA BOB, GAUNT GREY WOLF, GRIT-A-PLENTY.—*Dillon Wallace*. These stories illustrate some of the qualities needed for success. They tell specifically about trapping in Labrador.

POLLY OLIVER'S PROBLEM.—*Kate Douglas Wiggin*. How a young girl showed resourcefulness and initiative when confronted with her problem.

## Other Books.

Here are some biographies that stress the early efforts of some noted men and women.

LIVES OF GIRLS WHO BECAME FAMOUS.—*Sarah K. Bolton*.

BOYS' LIFE OF THEODORE ROOSEVELT.—*Hermann Hagedorn*.

FLORENCE NIGHTINGALE.—*Laura E. Richards*.

THE MAKING OF AN AMERICAN.—*Jacob Riis*.

UP FROM SLAVERY.—*Booker T. Washington*.

STORY OF GRENFELL OF LABRADOR.—*Dillon Wallace*.



## CHAPTER V

### AGRICULTURE

**What Is a Farmer?**—If you carefully examine the clothes you are wearing, you will notice that several different materials, such as felt, cotton, linen, wool, and leather, are used in making these different garments. Then, if you examine the dinner table, you will notice a great variety of articles used as food. There will be meats of various kinds, milk, eggs, vegetables, fruits, sugar, tea, and coffee. All these articles used as clothes and food come from Nature. Now the farmer is the person who deals directly with Nature and obtains these things for us. With his care, skill, knowledge, and industry, he cultivates the ground on which are raised the plant materials of which we have spoken. He also raises many kinds of animals for various purposes. Some of them are useful to the farmer himself in his work. Some yield milk and cream. Some are slaughtered, the flesh supplying meats and the skins furnishing leather.

**History of Farming.**—It is supposed that man obtained his food and clothing first by hunting. Indeed, among savages today this is a favorite method. But the cultivation of the soil is a very ancient occupation. Even among the savages there are usually some small patches of ground which are rudely cultivated for the purpose of obtaining food. The Indians knew about potatoes, corn, and tobacco long before the white

men came. A large part of the growth of civilization is due to the improvement of farming processes. Sometimes farming was so highly esteemed that the religion of the people was based upon it, as among the Romans, and even today, to a certain extent, among the Chinese.



*Courtesy International Harvester Co.*  
USING THE GRAIN-CRADLE

The old method of reaping grain

began, the grain-cradle and the cast-iron plow were invented. Then in rapid succession came the threshing-machine, the reaper, planting and cultivating machines, dairying machinery, and other labor-saving devices. By the aid of these machines the work of the farmer is much more productive now than it was a hundred years ago. For instance, in 1820 it required 150 man-

**Development of Farming.**—Up to the year 1800 there had been little improvement in farming processes since Bible times. But the last century and a quarter, which have seen such wonderful improvements in other industries, have also helped the farmer to free himself from many of the hardships of his calling. Soon after the nineteenth century

hours of work to produce 50 bushels of wheat. In 1920 it required only 7 man-hours of work to produce the same amount.

**New Ideas of Marketing.**—The invention of labor-saving machinery is not the only change that has taken place in the occupation of farming. Among the Greek and Roman farmers, as well as among our own American



*Courtesy International Harvester Co.*

#### REAPING BY MODERN METHODS

A gasoline tractor pulling two machines which cut the wheat and tie it in bundles which can be conveniently picked up by the wagons that follow

pioneers, the farm produced practically all that was needed to keep the family going. All the food materials and all the fibers for clothing were raised at home and worked up by the farmer's wife and daughters for use as food and clothing. A farmer's family needed very little money, and, indeed, saw very little from one end of the year to the other. But when the great factories were built, it was found economical to do most of this work indoors. Railroads made it easy and cheap to haul things back and forth. In these days the farmers,

as a rule, raise their crops and sell them as raw materials and buy from the manufacturers what they need. We are told that in 1790, the year of the first census, 97 per cent of the American people lived on farms, while in 1920 only 45 per cent did so. But we must remember



*Courtesy Advance-Rumely Thresher Co., Inc.*

#### UP-TO-DATE PLOWING

A powerful tractor pulls four plows, each one of which would require two horses and a driver

that many tasks which were formerly farm tasks are now done in the city.

**The Boy Who Wants to Farm.**—If a boy has a love for outdoor work, if he is reasonably healthy and strong, and, above all, if he likes to plan things for himself, he has the qualities of a good farmer. The last quality named is especially important. It is the men who can

plan things who raise better cattle and hogs, better wheat and cotton than their neighbors. They are the ones who improve the soil, and plant the crops best suited to the soil and climate.

**Preparation for Farming.**—According to the older farmers, studying from books is not at all the correct way to become a farmer. It is true that the boy who grows up on a farm learns, as part of his daily life-experience, many things useful to the farmer. But in spite of the opinions of the older farmers, such a boy should be encouraged to study as much as possible. Almost anything that is learned in school can be made useful on the farm. Arithmetic helps one to figure costs and returns. All the sciences, such as physics, botany, zoölogy, and chemistry, are helpful. Where there are local township or county high schools which offer special courses in agriculture, these courses should be taken.

**Material for Study.**—The energetic, upstanding boy, who is going to make out of himself the best possible farmer, finds endless material for reading and study. In each of the states and territories there is an agricultural college, and at each of these colleges there is maintained an experiment station. At these stations the students and professors are constantly experimenting with all kinds of farm problems. When an experiment has been finished, the results are often printed in bulletins. Almost any farmer can get these bulletins free or at a trifling cost. The Department of Agriculture at Washington also issues valuable bulletins from time to time. In addition to the bulletins, there



are many farmers' magazines—some weekly and some monthly—which should be read by every boy who is planning to enter this occupation.

**How to Become a Farmer.**—Mr. Herbert Quick describes two ways in which an inexperienced person may learn farming in such a way as not to lose his money by ill-advised schemes. By the first plan the boy who wants to learn gets a job as a hired man. These jobs are not hard to obtain, as farmers never seem to be able to get enough hired help. The county farm-agent



*Courtesy Andrews' Publications*

#### A BOYS' CALF CLUB

Competition for a prize given to the boy raising the best calf adds interest to the work on the farm

should be consulted, so that the would-be learner will be employed on a farm where he can learn the correct methods. The boy should then buckle down to work and study. He will be paid while learning, and, when the time comes to set up for himself, will have some money to buy stock and machinery for his own farm. He will by that time, if he is in earnest, know what kind of farming is the most profitable for such a farm as he has, and how to get the best results from his land and work. The other plan suggested by Mr. Quick is to have the learner take a very small plot of ground and

cultivate it under farming conditions. This cultivation should be under the careful supervision of the county farm-agent. Here the learner can study soil, costs, pests, returns, and so on. After several years of such study, he will be ready to take over a farm and go ahead. While learning in these ways, the collection and study of bulletins, books, and farm magazines should be encouraged and insisted upon.

The development of our rural schools in recent years affords the boy another method of becoming a farmer besides the two ways described by Mr. Quick. A great many counties in the United States have county high schools in which the boy from the country who is planning to remain on the farm can study a great variety of subjects which will help him to be a better farmer. In other states there are township high schools offering the same kind of work to the boys of the township. Many of these schools have small farms connected with them upon which actual field work can be done. In most cases, whether there is a farm connected with the school or not, the school arranges "farm-home projects" by means of which the boy or girl can obtain school credits for work done at home under the direction of the teachers of the school. Such projects are even more valuable in the training of farmers than work on the school farm. Wherever possible, the would-be farmer should take the complete course at the state agricultural college. A great many young farmers are not satisfied with less.

**The Opportunities of the Farmer.**—Men and women must always eat and always wear clothing. Therefore

there must always be farmers. It is one of the occupations that can never be done away with. And it is with farmers as with other business men. If they work hard and plan ahead, using good judgment in their crops and herds, there is no reason why they should not become



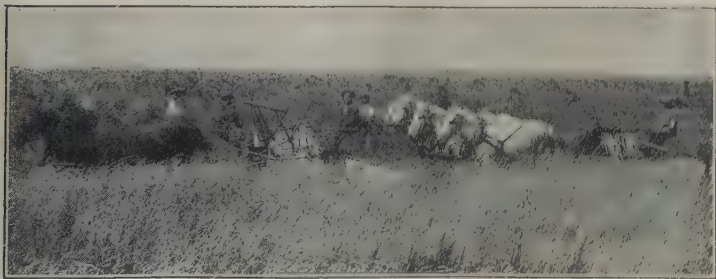
*Photo. International Film Service*

#### PICKING COTTON

Mechanical cotton pickers have not yet been perfected to the point of competing with the old-fashioned method of picking by hand

independent as they grow older. Perhaps this result will not come as soon as it might if they entered some other business, but the history of this occupation shows that, for many, there is a good income in farming. There are some farmers who, after allowing for the money they have invested, and the labor they perform, clear from ten to fifty dollars for each acre under the

plow each year. In the Northwest, wheat usually brings in a good return. In the Southwest, livestock has made many fortunes. In the South, cotton, garden truck, and tobacco bring good returns. Potatoes, hogs, poultry, and dairy-farming are each making a good living for thousands every year. There are in the United States nearly six and one-half million farms, valued at seventy-eight billion dollars. Over thirty-



#### REAPING WHEAT

On the level prairies of the Northwest enormous crops of wheat are grown with the aid of modern machinery

one million persons—that is, farmers and their families—live on these farms.

**What Kind of Farming?**—The kind of farming one wishes to engage in depends upon many things. Perhaps climate is one of the most important factors. Some crops, such as sugar cane and oranges, ought never to feel any frost. If the season which is free of frosts is at least seven months long, cotton can be raised. North of this belt, corn and tobacco can be grown, and still further north, wheat. Some of the experiment stations at the Canadian universities are trying to develop varieties of wheat that will ripen in still shorter growing



seasons. Of course, the more rapidly wheat ripens, the farther north it can be grown. In fact, the very best crops of any kind are grown near the northern or colder side of the crop zone. Many of the natural enemies of the crop flourish better in the warmer side of the zone, so that the farmer on the colder side has fewer pests to fight.

Rainfall is another factor to be considered. Too much rainfall makes it difficult to harvest the crop, and makes it necessary to construct expensive buildings. On the other hand, if the climate is too dry, the crops cannot grow at all. There are states where the farmers who depend upon rainfall alone for the moisture for the crops cannot count upon good harvests oftener than once in each three or four years.

**The Soil.**—Some parts of the surface of the earth are bare, hard rock. Other parts are crumbled rock or sand. Other parts are that curious mixture of crumbled rock and decayed vegetable matter, which we call soil. But there is an almost endless variety of soils. The sandy soil, the prairie, the black gumbo, the mountain valley, the clay, the limestone—all these are at the disposal of the farmer. The careful, far-seeing man will consider the temperature, the rainfall, and the soil when making plans for his crops. Of course, it is possible in some parts of the country to use poor soil. Some of the farmers in New Jersey and some of those in Northern Germany cultivate soils that the average American farmer considers waste lands. Such soils are profitable only if they are close to the markets, or if they are easily worked, or can be purchased very cheaply.



**The Successful Farmer.** Suppose that our student-farmer has studied the climate and the soil carefully, and has observed what crops are suited to these conditions, he is not yet ready to make his fortune at farming. There are plenty of farmers who drift along year after year and who are really worse off than the day-laborers who work at unskilled occupations. The real farmer must learn many more things. First, he must learn to produce crops. That seems easy—just plow, plant, and harvest. But production means much more. He must learn to produce at a profit. This means that he must be able to answer a lot of questions. When to plow? How to plant? How much seed to the acre? How much fertilizer and what kinds? How to fight pests? How to cultivate? Production is a science in itself. Then there are the problems of finance. How and where shall he borrow money, and above all, when? To what extent ought he to furnish his own money for labor, seed, and fertilizer, and to what extent may he borrow money for these expenses? And finally there is the problem of selling his goods. Should they be sold immediately after the harvest, or should they be held? Should the farmers get together on the selling question, or should each one try to find his own market? Or should he depend upon agents and commission men? There are, indeed, many mistakes a farmer can make, and if he makes too many, he fails.

**Better Conditions for the Farmer.**—As recently as 1890 most farmers rarely went very far from home. The farm was, in fact, a kind of prison. For this reason many of the farm boys and girls became discontented.

They wanted to have some excitement. They wanted to learn about other people and other communities, but they had few chances to do so. Now, however, the farmer has the electric railway, the rural free delivery, the telephone, the radio, and the automobile. His home community has been very much enlarged because of these helps.



*Photo, U. S. Dept. Agr.*

#### A BAD ROAD

*The team is barely able to pull the load of one bale through the mud*

**Further Needs.**—One of the most wonderful things about country life in recent years has been the good roads movement. In many of the states, thousands of miles of hard-surfaced roads have been built. A good road helps the farmer in very many ways. On a muddy dirt road two horses can hardly pull a ton—perhaps not more than half a ton. But on a well-graded, well-paved road, two horses can easily draw

three or four tons. So if a farmer must haul his produce to market, whether he raises wheat, cotton, or potatoes, the saving of time is very considerable, to say nothing of the saving in the wear and tear of the wagons and harness. These savings can easily and soon pay his share of the new road. His farm will increase very much in value, and lands formerly unprofitable because



*Photo. U. S. Dept. Agr.*

#### A GOOD ROAD

Ten bales are not too heavy for a team. The farmer makes one trip instead of ten

too far from the market may now be brought under cultivation.

**Schools.**—In our great cities the boys and girls can find schools for almost any kind of training they wish. Whether they want to go to college, into business, into shop work, or into the building trades, they find that their fathers and mothers have taxed themselves to equip schools in which the young people can prepare

for their work. In some parts of the country the farmers are doing the same, but much remains to be done. Our country schools should be organized so as to prepare the boys and girls for farming without going far from home.

It happens that more boys and girls grow up in the country than the farms can support. This is partly because much of the work that used to be done on the farms is now done in the cities and also because labor-saving machinery makes the farmer less dependent upon help than in former times. Where boys and girls who go to the city are unable to learn a skilled trade or prepare for a profession, they are usually able to get work as machine operators or at other partly skilled work. Often there are night schools that teach skilled trades or even train for professional work, and the energetic boy or girl will attend one of these. Such training, however, is not sufficient. Just as in farming, continued study after leaving school is necessary for advancement in any occupation.

**Help for the Farmer.**--Should the lack of proper schools discourage the young farmer? It need not do so. Experience for a few years at home on his father's farm, or on another man's farm as hired man, or above all on his own farm, working for himself, will solve many of them if he has brains enough to profit by his experience. Then there is the opportunity for making use of the experience of others. We have already considered books, bulletins, and magazines. In addition to these the young farmer will find his neighbors very helpful. At the grange meetings or at

the meetings of the coöperative marketing group he will have chances to learn many things about buying and selling. Almost all the State Agricultural Colleges offer short courses in the winter when the crops are out of the way, and some of them offer free instruction by correspondence. Here he can learn



*Photo. U. S. Dept. Agr.*

#### PIGS HARVESTING PEANUTS

Frequently this proves the most economical way of selling a crop about better methods, better products, and better conditions.

**The Farmer a Manufacturer.** With the changes in farming brought about in the last hundred years, the farmer may consider himself a kind of manufacturer. His fields and stables may be looked upon as his factory. Indeed, he may realize two or three profits instead of one if he manages rightly. Of course, he can sell his corn, hay, or peanuts. But why not turn the corn and peanuts into pork? He can sell the hay, but why not



turn it into cream or beef? Eggs and chickens enable him to win additional profits from his grain. This means more work but also more profits. When he is obliged to haul his produce to market, it costs no more to haul a load worth a hundred or two hundred dollars than one worth ten or twenty dollars. Besides this



HIGH SCHOOL TEAMS IN A CORN-JUDGING CONTEST  
This kind of training makes good farmers

saving in the hauling expense, the fertility of the farm is steadily improved.

**What Boys and Girls Are Doing.**—The South and West are already famous all over the country because of the success of the “Corn Clubs” of the boys and girls of those regions. These young people take an acre of ground and see how much corn they can raise when the acre is farmed in a scientific way. Some of the boys have also tried what they can do with pigs—in order to find out how much the pigs would increase in weight when fed and tended in a scientific way. Some of the

girls have done excellent work with canning clubs. These various activities of our boys and girls are a fine thing, since in this way, perhaps better than in any other, they can find out the possibilities of farm life. In all parts of the country the young people have also been studying the life habits of weed and insect pests.



*Photo. U. S. Dept. Agr.*

#### A BOYS' PIG CLUB JUDGING PIGS

With expert training boys soon become good judges of stock

This study is very helpful to the farmers of their communities. With some added encouragement, these boys and girls will become the leaders of their communities in the days to come.

**The Advantages of Farm Life.**—The farmer has his home and his home life. He need not be separated from his wife and his family for days at a time. He works in the open—in the sunlight and fresh air. He

does not have to endure poisonous fumes, smoke, damp, or darkness. He has a great variety of work. It changes from hour to hour and from season to season. He need not stand at a machine, engaged in a single task. His income, if he works intelligently, will always



*Courtesy International Harvester Co.*

#### MODERN FARM ADVANTAGES

Good roads, the automobile and motor truck, the telephone, radio, and rural free delivery of mail have added greatly to the comforts of farm life

be sufficient, and in almost any case will compare favorably with that of a city worker, especially after the city worker allows for high rents, carfare, and living expenses. If hard times come, the farmer is reasonably sure of shelter and food. He need not starve.

The modern farmer has fully as many chances for enjoyment of his spare time as the city dweller. The

automobile has made it possible for him to go to town to the movies or to the theatre in the evening. When there is not so much work to do, he can go hunting or fishing. Parties, church socials, and festivals give country people a chance to get together quite often. And now the radio brings to his fireside a richness and variety of entertainment and instruction undreamed of before this wonderful discovery. Country life for most farmers is not so lonesome as it was before the days of the good roads.

**The Chance for Service.**—All of us like to feel that the work we do benefits somebody. We pass laws against thief and swindler because the things they do harm the community. We honor and reward those whose work benefits humanity. If this is true, then the work of the farmer should be highly honored. He should also think highly and proudly of his work. For, as he goes about his daily tasks, he can picture to himself the produce of his farm feeding the hungry and clothing the naked. Of such a life work he need not feel ashamed.

## THINGS FOR PUPILS TO DO

**Questions for discussion in class.**

Are there any crops suited to the soil and climate of your community which the farmers are not raising? Discuss the reasons why they are not.

What kind of social diversion do the farmers and their families enjoy? Do they have dances, picnics, and parties? Are there any festivals connected with the harvest?

Are there any corn clubs, canning clubs, or pig clubs being conducted by the farmers' girls and boys of your community? Are you a member? Discuss the value of these activities.

Problems to be studied outside of class.

Make a list of the principal crops raised by the farmers in your community.

Find out the average yield per acre for each of these crops. How does this compare with the best yield per acre that you ever heard about? Ask some farmer friend of yours why his fields do not come up to this record.

If you know some old man who is a farmer, ask him what he thinks about reading books, bulletins, and magazines about farming. Then ask some young farmer the same question. Do their answers agree? What do you think of the answers?

Find out how a young man in your community who wishes to begin farming can get the money. How much interest must he pay?

If you know some man who has given up farming and come to town to live, try to find out why he did this, and how he likes the change.

If you know some business man in town who was a boy on a farm, ask him to tell you why he did not stay on the farm and become a farmer.

## BOOKS FOR PUPILS TO READ

### Story Books—Fiction.

MERRY ANDREW.—*F. Wier*. The story of a country girl who helps her grandfather at farming, and finally becomes the farmer herself, making a success of it.

THE FAIRVIEW IDEA.—*Herbert Quick*. Story of an Iowa community, the various ways in which farmers learned their job and developed a fine community spirit.

TOM WICKHAM, CORN-GROWER.—*Carl Brandt*. A boy who tried for the corn-grower's prize and showed his unbelieving father a few things.

JOE THE BOOK FARMER.—*Gerrard Harris*.

### Other Books.

MEN WHO ARE MAKING AMERICA.—*B. C. Forbes*. Contains the stories of James B. Duke and of Cyrus McCormick. The first is the most successful tobacco grower, and the second an inventor of machinery.



STORIES OF USEFUL INVENTIONS. — *Samuel E. Forman.* Tells of the invention of the plow and of the reaper.

THE FARMER AND HIS FRIENDS. — *Eva M. Tappan.*

STARTING IN LIFE. — *Nathaniel C. Fowler.* One chapter discusses boys starting on farms as hired men.

THE FARMER OF TOMORROW. — *Frederick I. Anderson.* A very interesting book telling what is the matter with farming conditions today, and what farmers may do to improve these conditions.

NEW SCHOOLS FOR OLD. — *Evelyn Demey.* Telling how the country schools may be reorganized to meet the real needs of the farmer.

VOCATIONAL ARITHMETIC. — *Harry D. Vincent.* Some of the lessons are based on the problems arising out of the raising of certain crops.

VOCATIONS FOR GIRLS. — *E. W. Weaver.* Chapter XXIX tells how girls can succeed when engaged in farm work.

## CHAPTER VI

### AGRICULTURE

#### *Special Types: Animal Husbandry*

**Kinds of Farming.**—One of the advantages of farming as an occupation is the fact that the boy who is planning for it has a wide choice among the different kinds of farming suitable to his locality. We think of all farmers as doing about the same thing. Really, we might almost as well think of all factory-workers as doing the same thing. Even where the soil and climate are uniform, a wide choice can be made by the beginning farmer.

**The Single Crop Method.**—All the farms of a community may be divided into two general types. Farms of the one type raise only one crop—the same crop year after year. On a farm of the other kind we can see a great variety of crops at the same time. To the young man just beginning, the first kind seems very desirable. If he has only one crop, he need not take the time to learn more than is necessary for that crop. There will be weeks and even months when his work will be very light. His marketing problem is very much simplified. These considerations cause many young men, and older ones too, to devote their entire attention to a single crop.

**Disadvantages of This Method.**—But the single crop, whether sugar, cotton, wheat, or tobacco, has many disadvantages. In the first place, a single crop is bad

for the soil. One plant may need certain mineral substances more than others. If this plant is grown in the same ground year after year, the minerals are gradually



*Photo. U. S. Dept. Agr.*

#### THE COTTON BOLL WEEVIL

In the cotton boll at the right is the worm. The black area shows the damage done by the worm which feeds on the growing cotton fibers. In the upper left-hand corner of the picture is the full-grown weevil

used up, and the crop becomes smaller and smaller each year. The second objection has to do with pests. If a whole community or a whole state is dependent on one crop, the coming of a pest may seriously affect the

wealth and welfare of the citizens. This fact has been brought home to the cotton growers of the South with the coming of the boll weevil. The Hessian fly and the chinch-bug worry the wheat-farmer, and the San José scale the fruit-growers. The third objection to the single crop has to do with finance. If there happens to be a great demand for the crop, the farmers will, of course, make money. But such exceptional demands are likely to cease. Then the farmer with only the one product cannot sell at a profit. This will mean that his creditors, the bank, the machinery agent, the store-keeper from whom he buys his supplies, and even the laborers, will suffer. People who live in the cotton belt remember such a period about 1913 and 1914. The farmers of the wheat belt had a similar experience in 1922 and 1923. About the same time the sugar-growers of the United States and of Cuba saw raw sugar drop from twenty-two cents a pound to four or five cents a pound. In each case there was a great deal of suffering. Potato growers and tobacco farmers could tell similar tales.

**Diversified Farming.**—One of the features of well-planned diversified farming is the fact that the farmer has work the year round. Some of the younger farmers think that this is a disadvantage. But a real disadvantage lies in the fact that the farmer must have the proper machinery and implements for several crops. If the farm is a small one, this means a very large investment in proportion to the returns. This disadvantage can be overcome if there are a number of small farms not too far apart. In such a case, by proper coöpera-

tion, each farmer can buy one or two of the machines or implements needed. These machines can then be used by the entire neighborhood. A potato-planter can easily be used on a hundred acres each year and lasts nearly as long as if it is used for only ten or twenty acres. A grain-harvester can cut one hundred and fifty acres a year as well as forty. Threshing machines and ensilage



*Courtesy Missouri Pacific Ry.*

#### THRESHING RICE

In places where there are many small farms, the threshing machine is taken from one to another until all the grain in the neighborhood is threshed

cutters are now taken from farm to farm. There is no reason why other expensive equipment should not be used in the same way.

**Advantages of Diversified Farming.**—It is really worth while to try to overcome the disadvantages, since the advantages of this method of farming are so great that this method should be employed everywhere. All the faults of the single crop can be remedied by having several crops of different kinds,



and "rotating" from field to field. This rotation should be carefully worked out so as to have the crops best suited to the soil, climate, and markets of the community. A favorite five-year rotation in many



*Photo. U. S. Dept. Agr.*

#### CORN AND PEANUTS IN ALTERNATE ROWS

After the corn is harvested, pigs or cattle are turned in to fatten on the peanuts which form rich food. This is called diversified farming

northern dairy regions can be made by dividing the farm into five fields. Each field gets, in turn, one year of potatoes and oats, one year of wheat, two years of grass, and one year of corn. A favorite three-year rotation of some Western farmers gives each field one year of oats, one year of wheat, and one year of clover or alfalfa. In the Southern States, where the single

crop has been so long in favor, corn and beans, or peanuts introduce a good diversity. The farmer is not now dependent upon one crop alone. If it is a bad year for wheat, it may be a good year for corn or potatoes. If the boll weevil is in the cotton, the corn and peanuts will help the farmer out of his difficulties. So great is the benefit of diversifying, that some farmers in the South have asserted that the boll weevil has done more good than harm by forcing them to adopt this profitable method.

**Further Advantages.**—It is easier for the farmer who raises different crops to “manufacture” his produce into something more valuable and easier to haul to market. His peanuts and corn are excellent hog-feed. His corn, in the form of ensilage, and his hay are easily turned into beef and butter. The financing problems of our farmer are now much easier to solve. A one-crop farmer cannot borrow if prices are low. But the several-crop farmer has just that many more arguments at the bank, and they are all good arguments. Finally, if there are not too many fields of the same kind of crop too close together, it is easier to fight the pests, and the victory in the fight is much more certain.

**Other Kinds of Farming.**—Besides the single-crop and diversified methods, there are several other kinds of farming that can be done. Sometimes a farmer specializes in the raising of steers or hogs or horses. We can call this specialized farming. It is more in the line of the farmer-manufacturer to whom reference has been made.

**Cattle-Raising.**—There are large regions of the

United States—in fact, the greater part of several states—where the land is covered with a natural grass. There is too little rainfall to make this land good for crops unless it can be irrigated. Here cattle and sheep are grazed by the thousand. The cattle are not raised for dairy-products, but for beef. Of course a great



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#### THE ROUND-UP

Cowboys gathering cattle for shipment to market

many cattle are fattened for the market as part of the program of diversified farming. But it is in the grazing states that the great herds can still be found. To go into this business requires a large amount of money unless the beginner is willing to do what a great many of the cowboys have done. The cowboy registers his

"brand," and then, while working for his employer, gradually gets his herd together. But since the best parts of the "open range" have nearly all been settled by crop farmers, most of the beef cattle are now raised and fattened on small farms. Even the ranchers have irrigated fields of alfalfa now from which the cattle can be fed during the winter.

On the small farms, cattle are very useful. The corn and hay can be fed to them, and the manure helps to keep up and improve the fertility of the soil. In some of the southern states there are a number of pests—ticks and flies—which make it difficult to raise and fatten cattle. This difficulty is being overcome in various ways. The demand is so great that it is worth while to discover remedies. The young farmer need not hesitate to enter this field, as the prices are usually good. The amount of beef consumed in the United States each year for each man, woman, and child is about sixty pounds. In addition to the beef, each man, woman, and child averages nine pounds of veal, six pounds of mutton, seventy pounds of pork—in all, about one hundred and forty-five pounds of meat. This was in 1920. In 1923 the figures amounted to about 175 pounds. The number of cattle has not kept up with the increase of population, as can be seen from the following table:

	Cattle in the U. S.	Pigs in the U. S.	Population
In the year 1900 . . . .	12,254,500	92,396,500	75,994,515
In the year 1920 . . . .	12,271,200	92,172,256	105,710,820

**Hog-Raising.**—Hogs are very efficient machines for



turning skim-milk, corn, and peanuts into pork. If they can be kept free from disease, hog-raising is likely to be very profitable to the owner. But here is where study and care are necessary. It is very easy to make twenty dollars' worth of pork with twenty-five dollars' worth



ONE WAY OF GETTING CORN READY TO MARKET  
Pork is one of the most important meats

of feed, but no farmer can afford to keep such production up very long. Any boy, however, who has done any studying for pig-club work, knows that it is also possible to make twenty dollars' worth of pork with twelve dollars' worth of feed. This pays better.

**Dairying.**—This is one of the most interesting of the various kinds of stock-farming. There are many problems of production and marketing to solve. Quite a



large amount of money is necessary to start a dairy farm, especially if the farmer is resolved not to have any "boarders" in his stable. This kind of farming can very well be learned by the "hired man" system. Not a single day can the dairyman neglect his work.



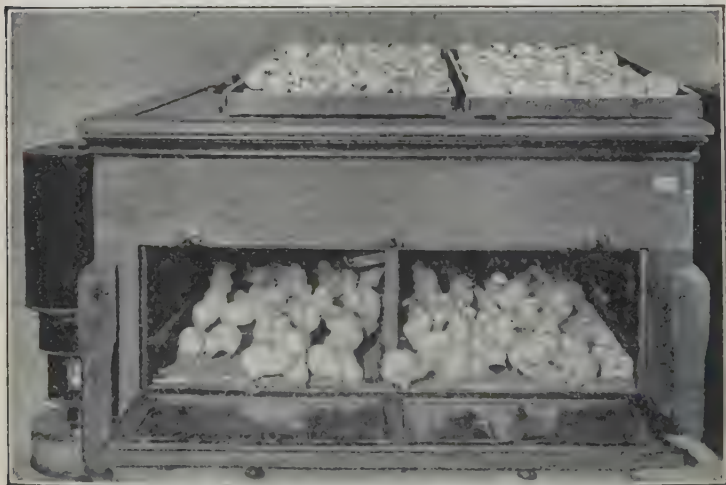
*Photo. Underwood & Underwood, N. Y*

#### ELECTRIC MILKING MACHINES AT WORK

This device has greatly reduced the amount of labor necessary to operate a dairy farm

Dairying fits in well with the method of diversified farming. If it is planned to sell the fresh milk each day the farm should not be too far from the city or cannery. On the other hand, if the product is in the form of butter or cream, the distance may be somewhat greater. There is little reason to fear that the market will be

overcrowded. About thirty millions of quarts of fresh milk are consumed each day in the United States. Each man, woman, and child also consumes about fourteen dollars' worth of butter and cheese each year. This does not take into account the enormous amounts of cream used in making ice-cream.



NEWLY HATCHED CHICKS IN AN INCUBATOR

Some incubators hold as many as 10,000 eggs at one hatching

**Poultry.**—The people of the United States demand great quantities of poultry products—eggs and dressed poultry. Over one billion dollars were spent in 1920 in this way.

Formerly it was thought that a poultry farm must be located near the city or town which was to be the market. With the great development of the parcel post and the automobile, this is no longer necessary.

This branch of farming does not require great physical strength, nor is it necessary to have as large an amount of money as in some of the other kinds of farming. Indeed, it often happens that a person whose health is somewhat delicate has made a great success of



BEE HIVES

The honey industry is important and many farmers are taking up bee culture

poultry-farming, if he is willing to "stay on the job." There are plenty of bulletins, books, and magazines which the beginner can consult, and which he will find helpful.

**Bee-Culture.**—Honey has always been a favorite food with human beings. In fact, in ancient times it

was almost the only sweet known. Bees have been domesticated and carefully bred—so carefully that some of the queens are worth several dollars. Bee-culture is a light, pleasant, and clean occupation, provided you do not suffer too much from bee-stings. There is also a keen demand for honey. In 1920 the people of the United States spent nearly fifteen million dollars for honey and wax. The South ought to be especially interested in bee-culture, since the working season for the bees is so long there. Texas and California realize this, each producing over a million dollars' worth of honey and wax every year.

### THINGS FOR PUPILS TO DO

#### Questions for discussion in class.

Do the farmers in your community depend upon one crop alone? What crop is it?

Take the figures for meat consumption in the chapter. Figure how much is eaten in your town each year. Do the farmers of the neighborhood raise enough to supply this demand? Why don't they?

Does anybody you know keep bees? Have they extra honey or wax for sale? Is yours a good country for bees?

#### Problems to be studied outside of class.

Ask one of the older farmers, who has been raising one crop only, whether he gets as large a yield per acre now as he did twenty years ago.

Do any of the farmers near your town keep cows for milk? How much does each cow average per day? Find out which breeds of cows produce the most milk. Which breeds are best for beef?

How many acres does the farmer allow for each cow in the herd? See whether the dairy farms are better kept and more fertile than the farms where no cows are kept.

Make a list of insect pests that destroy the crops of your

neighborhood. How do the farmers fight them? Are they successful in this fight, or are the insects beating them?

What are the principal blight pests of your community? Find out what the farmers are doing to master them.

Ask some farmer which breeds of chickens are best for eggs; which are best for broilers. Is there a good market for poultry in your town?

Try to find out from some farmer how much feed is required to make a pig gain 200 pounds in weight. Then find out the market value of the feed and of the pork. Figure out whether it pays to raise pigs.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

DALE AND FRASER, SHEEPMEN.—*Sidford Hamp*. A story of sheep-raising in Colorado.

THE VIRGINIAN.—*Owen Wister*. The scene of the story is laid in Wyoming in the days of the big herds and ranches. Portrays the life and work of the cattlemen.

WILDERNESS HONEY.—*Frank Pollack*. Tells how a young girl and her two brothers undertook bee-culture on a large scale in Canada.

### Other Books.

RURAL ARITHMETIC.—*Madden and Turner*. Chapter VII gives a series of problems based upon cattle-feeding.

HOW THESE FARMERS SUCCEEDED.—*John R. MacMahon*. Most of the chapters contain information on modern dairying.

THE COTTON AND LINEN DEPARTMENTS.—*Eliza B. Thompson*. Chapter II contains information on the sources and cultivation of cotton.

CAREERS FOR WOMAN.—*Catharine Filene*. Pages 37 to 42 tell about the raising of poultry, pages 42 and 43 about stock-raising. Pages 196 and 197 tell about dairying as a career for women, and on page 213 the necessary training is explained, also some idea as to the returns.

TRADE FOUNDATIONS.—*Guy M. Jones Co*. Pages 30 to 33 contain a good deal of information about butter and its manufacture; pages 134 and 135 give the same kind of information about cheese.



## CHAPTER VII

### AGRICULTURE

#### *Truck-Gardening, Berries, Fishing*

**Other Special Types of Farming.** In the last chapter we studied some of the kinds of farming in which some animal, bird, or insect furnished the produce which the farmer sold. There are still other types of farming that should interest the boy or girl who is planning to make this occupation a life work. Several of these are especially suited to the South, since the produce can easily, quickly, and cheaply be shipped to the great Northern markets at a season of high prices before the northern farmers can, because of their later growing season, supply the demand.

**Truck-Gardening.**—There is always a demand for early vegetables, melons, and fruits. The northern consumer, after his long, cold winter, eagerly awaits the appearance of these things in his markets, and is willing to pay well for them. The southern truck-farmer can plant, grow, harvest, and ship a crop of these products before the busy season of cotton-picking begins. Besides, he can use these crops, or some of them, to diversify his farming as was discussed in the last chapter. A field that has been properly fertilized and cultivated for melons or sweet potatoes will produce a splendid crop of corn, peanuts, or cotton the following year. Or, if the farmer wishes to use all his fields for truck-gardening, he can have such a variety of products that they

will be ready for the market at different times. In this way he can readily keep his help at work all summer, and, what is of great importance to many farmers, will have payments coming in at all times.

**Intensive Gardening.** Indeed, some of the products of the truck-farm, such as onions, radishes, and green



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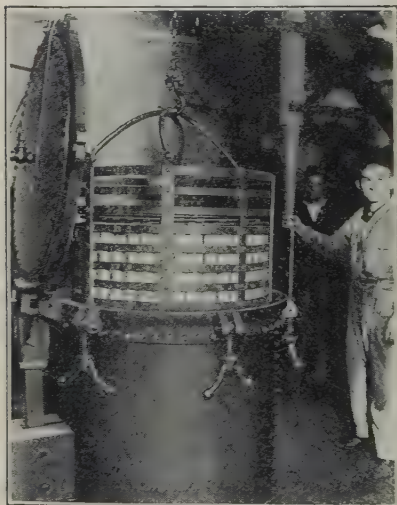
#### WATERMELONS

A fruit which thrives in a rich, warm, sandy loam

peas, are ready for the market so early in the summer that it is possible, and profitable, to put in another crop immediately after marketing the first one. In this way the land will be doing double duty. A careful truck-farmer may get a third, and even a fourth crop in the same growing season from the same land.

**Disadvantages of Truck-Gardening.**—Of course, this kind of work is not all pleasure and smooth sailing. Unless the railroad service is very reliable, the produce

may get to market in poor condition. Most truck-farming requires plenty of help during the picking or gathering season. As this work is light, much of it is done by women and children. Where help is hard to get, truck-farming is not usually profitable. In addition to this, many farmers have had trouble with careless or dishonest commission men, and have suffered great losses on this account. Some of the peach growers of Maryland and Delaware could tell stories about that trouble. The Northwestern apple growers, the Southwestern orange growers, and the Hawaiian pineapple growers have organized coöperative selling organizations. These organizations grade



*Courtesy Maryland State College of Agr.*

#### CANNING VEGETABLES

A steam cooker which prepares fresh vegetables for use in the winter. Canning has added greatly to the value of truck farms

the product, supervise the packing, and conduct advertising campaigns. These organizations have helped the farmers greatly.

**Canneries.**—Because of these difficulties, and also because there is a constant demand for the product, we find canneries in many neighborhoods. Many of the

most successful of these were built by the farmers themselves as coöperative enterprises. The Hawaiian Pineapple Growers have several canneries. It is true that in some parts of the South certain canneries have made the people suspicious of the profits to be made. The plants were dirty, and they employed people who were sick or too old or too young. As a result the canned



*Photo. Coleman's Studio, Montgomery, Ala.*

#### PACKING STRAWBERRIES

Grading and boxing the berries for shipment

goods were of a poor grade and brought low prices. No wonder the farmer was discouraged. But if the farmers can get together, and especially if they can get a good manager who knows his business and can handle the farmer boys or girls who do the work, and if the farmers will then only follow the advice and suggestions of the manager, the cannery is bound to be a success. That is quite a list of *if's*. There is no reason why a young man starting out as a

farmer should not learn the cannery business so that he can act as manager.

**Berries.**—Doctor Boteler in Izaak Walton's "The Compleat Angler" said: "Doubtless God could have made a better berry than the strawberry, but doubtless God never did." Millions of people who never heard of Doctor Boteler nevertheless agree with him in his liking for this delicious fruit. But, owing to the lateness of the growing season, the truck-farmers of the North cannot get this fruit into the market before the middle of June. The city dweller thinks that this is entirely too long to wait, and so hundreds of carloads are shipped from the South into Boston, New York, Philadelphia, and the other centers of population in the colder belt. There should be but little loss if the berries have been properly picked and crated for shipment. The demand is increasing year after year. These great Northern markets have never really received all they could use, and they are increasing in population all the time. There seems to be little reason to fear that too many will be shipped. The boy who wants to plant an acre or two in strawberries need not hesitate because of a possible falling off of the market. He can sell all he can place on the market.

**Flower-Culture.**—There are parts of the world, as in the valleys of Bulgaria and Roumania, where the cultivation of flowers in the open air is the chief occupation of the people. These flowers, when in full bloom, are used in the manufacture of the delicate and costly flower-perfumes which have a sale all over the world.



Little of this work has been done in the United States, although our grandmothers used to make rose-water and lavender-water for their own use years ago. Within recent years, however, several farmers in the State of Florida have started this industry. This may, in the



*Courtesy The Philadelphia Commercial Museum*

#### HYACINTHS IN BLOOM

Raising flowers for marketing in city florist shops

years to come, work into something very interesting and profitable, although as yet the industry has only begun. At any rate, a boy or girl interested in flowers might profit by looking more closely into the industry.

**Cut Flowers.**—If we have not undertaken as yet to raise many flowers for the perfume industry, we nevertheless raise a great many for the purpose of selling the

cut blooms. This industry is one of the branches of farming that seems to have a great future. There is always a demand, and the prices are usually good. If one does not care to run the risks of entering such a new and untried industry as the scent manufacture, which requires considerable training and skill, the flower lover can make a very good living from the cut-flower trade.

**Hothouses or Greenhouses.**—The demand for flowers and vegetables cannot be fully met even by the long growing season of the South. If the young farmer has plenty of money, he might put half an acre or so under glass, equip the hothouse with the necessary furnaces and steampipes, and proceed to grow flowers for sale at all seasons. Vegetables and berries can also be grown for the winter trade if the market is near enough. These vegetables and berries must, of course, be sold at very high prices because the expenses of this work are very great. In some parts of the country the owners of the hothouses make considerable sums of money by starting tomato, cabbage, and tobacco plants for the farmers and truck-gardeners, who buy them by the hundred. By means of these plants, early produce can be placed upon the market even in the regions of late frosts. Tobacco is raised as far north as Connecticut and Canada by using set plants which were grown from the seed in hothouses early in the spring.

**Landscape Gardening.**—Those who have been fortunate enough to visit England or France will recall some of the wonderful gardens near some of the homes of the wealthy people of those countries. Many of the

wealthy people of America wish to have such gardens also. This is a highly specialized science—it may even be called an art. There are very many things that must be known by the gardener. The arrangement of the flowers so as to secure harmony of color as well as a



*Courtesy H. J. Heinz Co.*

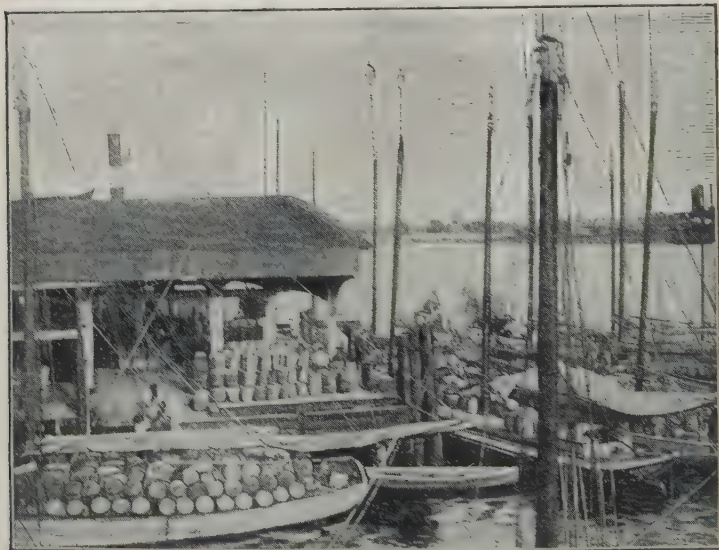
#### SPECIALTY FARMING

Raising tomatoes for catsup.

constant succession of blooms throughout the growing season, the arrangement and care of the trees, the grouping of the shrubbery, each of these problems requires skill, knowledge, care, and real artistic ability.

**Advantages of Special Farming.**—In almost all kinds of specialty farming the amount of land needed to make a good living is small. There are advantages in this. Most of us like and need the society of our fellow men,

but in a community where the farms are very large, we sometimes cannot have as complete a social life as we would like. Some of the best farmers in the world are the French and Italian farmers. In their own countries their holdings of land are small, and a natural and



*Courtesy Div. of Publications, Washington, D. C.*

#### SHIPPING TRUCK TO MARKET

Water transportation saves much of the expense, if the farm is far from the market

wholesome social life exists. This is one of the reasons why these good farmers who come over here finally land in the cities. The farm life here is so different that they do not feel at home. Now in a community made up of people who hold only small pieces of land, the neighbors are nearer together and a better social life is possible. The great problem of the loneliness of farm



life is rapidly being solved by the automobile, the telephone, and the radio. It is a problem, however, that need not trouble the young man or woman who plans to be a truck-gardener.

**The Small Capital Needed.**—It is easy to select a type of farming that requires twelve or fifteen thousand dollars to get well started. At least that much must be spent on land, buildings, livestock, and implements in order to have a modern plant. But the specialty farmer, unless he is planning to start a greenhouse, does not need nearly so much. His earlier years need not be darkened by the mortgage and the notes in the bank. This is a real burden on American agriculture. In 1920 the farms of the United States carried mortgages amounting to over four billion dollars. The interest the farmers had to pay before they had anything for themselves was nearly three hundred million dollars. These sums do not include what the farmers owed to the banks in notes, nor what they owed to supply houses. The specialty farmer need not be hampered by such huge debts. He needs very little land, and the implements are not expensive. Nor does he need high priced livestock and expensive barns and stables.

**Warning.**—A great many people have spent money on schemes advertised in the magazines and newspapers by which they are to buy so much land, and the company will then farm the land and mail them large checks for their share of the profits. No real farmer ought to be caught by such bait. He knows that it takes constant planning and careful work to make a farm pay. Persons who make such offers should be



ignored or politely thanked and answered with a most emphatic "NO!"

**Fishing.**—The Census Bureau lists fishing with agriculture. Really, fishing is a highly specialized industry. The boy who gets a chance to go fishing in the creek or



THE FISHING FLEET IN SEATTLE HARBOR

The fisherman's life is one of hardship and adventure

river perhaps once a month may think that this is a job at which he would like to spend his life. But the real fisherman knows what dangers of storm and fog and collision he has to meet every day. This industry is so important that the fisheries of the North Atlantic have been carefully worked almost ever since America was discovered. This industry yields other products besides

food. Certain oils are derived from fish, and also a product known as "tankage," very useful to the manufacture of fertilizer. The skin of the shark has long been used for a kind of leather called "shagreen," and in recent years has even been used for shoes. Hunting



*Photo. Brown Bros., N. Y.*

#### A SALMON HATCHERY

Here the fish eggs are hatched and the young salmon taken care of until they are big enough to look out for themselves

the seal and the whale are usually classed as fishing, although these animals are not fish. The beautiful skin of the seal makes a fine fur, and the whale yields oil, whalebone, and sometimes a substance called ambergris, much desired by perfumers.

**The Importance of Fishing.**—According to the Census Reports, this is an important industry in all the states. New England is the center of the cod and mackerel fish-

eries, Maryland of oyster fishing, and the Northwest of the salmon fisheries. The Northwest includes Alaska. This industry gives employment to about two hundred thousand people in the United States. The yearly value of the fish products is over one hundred and ten million dollars.

**Fish Culture.**—One branch of this industry of interest to the young man choosing his occupation is the hatching of fish eggs and the care of the young fish. Many of the states have these hatcheries, and the Bureau of Fisheries at Washington is one of the leaders in this field. In 1921 this bureau distributed, in the streams and lakes of the country, over a billion fish eggs, three and a half billion fish fry (very young, newly hatched fish), and nearly a quarter billion fingerlings (young fish about as big as a man's finger). Besides this work, the bureau has made and tried out plans for establishing fish ponds throughout the country. Bulletins may be obtained showing how to construct one of these ponds, how to stock it and take care of it, what kind of fish to place in it, and so on. This is something well worth looking into if you are at all fond of fish. The good old monks of the Middle Ages had these fish ponds connected with the monasteries, and there is no reason why we should not raise more fish in our small ponds.

### THINGS FOR PUPILS TO DO

**Questions for discussion in class.**

What are the different kinds of truck that grow well in your neighborhood?

At what dates can the farmers begin to ship watermelons? cantaloupes? strawberries?

What has been the average value of a unit measure (bushel, crate) of potatoes, of melons, for the last five years? What has been the value of the crop for each acre planted?

What kinds of fish can be caught in your nearest stream? What kinds are good to eat? Has your state a fish hatchery? Has the state ever placed any fish in your stream? What kinds?

Problems to be studied outside of class.

Try to have a talk with some commission man in your town. What are some of his rules about time of gathering, method of packing, and rates of commission charged?

If you know a truck-farmer, ask him how many crops, and of what kind, he can take from one piece of land in a year.

Is there anybody near your town who grows flowers, such as roses or peonies, for the market? Find out something about his methods of work--the planting, cultivating, and marketing.

Find out the following facts as fully as possible: How much would it cost to fertilize one acre of ground, plant it with strawberries, cultivate the crop, buy boxes and crates, pick the berries, and sell them? How many quarts may be expected from the acre, and about what price may be expected from the commission men? Does raising berries pay?

If there is a fine, well-paved road running out of your town, find out the value of farm land along this road. Compare this with the value of farm land along a dirt road.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

JIM SPURLING, FISHERMAN.—*Albert W. Tolman.* The story of the adventures of three boys at deep-sea fishing off the coast of Maine.

CAPTAINS COURAGEOUS.—*Rudyard Kipling.* A spoiled rich boy is accidentally swept from the deck of an Atlantic liner and rescued by a Banks fisherman. The labors and perils of cod-fishing on the Banks.

ELIZABETH AND HER GERMAN GARDEN.—*Countess von Arnim.* Some of the troubles and joys of a lady trying for a garden under unfavorable circumstances.

**Other Books.**

THE GIRL AND THE JOB.—*Hoerle and Saltsberg*. Pages 76 to 79 tell something about the possibilities of the work of the florist.

MAKING THE FARM PAY.—*Colvin C. Bowsfield*. Pages 171 to 199 give some of the facts about fruit-raising and the profits.

BOY SCOUTS OF AMERICA.—This handbook has several interesting pages on gardening.

VEGETABLE GARDENING.—*Samuel B. Green*.

HANDBOOK OF EMPLOYMENTS.—*Maria Matilda Ogilvie Gordon*. Pages 219 to 221 tell of the work of the nurseryman.

THE TRAINING OF A FORESTER.—*Gifford Pinchot*. The author of this book was head of the Bureau of Forestry under President Roosevelt.

CAREERS FOR OUR SONS.—*George H. Williams*. Forestry as practiced in Great Britain.

THE FARM FISH POND.—An interesting bulletin from the New York State College of Agriculture.



## CHAPTER VIII

### MINING

**Mining: Its History.**—At a very early period of time man learned that certain of the substances of the earth's crust were useful to him, or could be used as ornaments.



#### AXES OF ANCIENT TIMES

No. 1, smooth stone axe; No. 2, rough stone axe; No. 3, iron axe-head showing socket; No. 4, bronze axe-head

The very first of these earth-substances, perhaps, that man learned to use were stones, which he chipped into shape for axes, spear-heads, and arrow-heads. He learned to make some useful implements from stones also. And when he felt the desire to decorate himself,

the many different kinds of colored clay afforded him the means to do so. The use of stone weapons and implements continued for a very long time. After they had been used some thousands of years, men learned to grind them smooth and give them a polish. These periods of time are described by historians as the Old Stone Age and the New Stone Age.

**Metals.**—Several of the metals are found pure in



PRIMITIVE MEN SMELTING AND WORK-  
ING IRON

One of the most important discoveries in the history of man was that of the properties of iron

nature. This is true of gold and, sometimes, of copper. These two were without question the first metals which man learned to use. The gold was too soft for weapons, but was valued highly as a means of adornment.

But when a little tin is mixed with the copper, we have bronze. This material makes much better weapons and tools than stone. That period of the world's history in which bronze was largely used for weapons is known as the Bronze Age. But another metal was to displace bronze. Many of the shooting-stars are almost pure iron. Iron was for this reason looked upon as a gift of the gods. After many years man learned that there were certain rocks which also contained iron. When this knowledge became widespread, the Age of Iron was ushered in.

**Building Materials.**—Man had used stone and brick for his buildings long before he knew enough to write history. There are stone ruins that are many thousand years old, and in Egypt and Babylonia bricks—either sundried or baked—were made at a time so far back



*Courtesy Marion Steam Shovel Co.*

#### STEAM SHOVEL AT WORK

For open mine workings, grading, and most excavating operations, the power shovel has displaced hand labor. This machine goes to its work on a caterpillar tread driven by its own power, and can fill a wagon with two bites of its huge scoop

that we cannot be sure how many thousand years it was.

**Mining--What Is It?**—Mining may be defined as the process of taking any desirable substance from the crust of the earth. The method of working the mine and obtaining the substances desired varies. Some

are obtained from "open workings" which are near the surface of the earth. In this class are clay-pits, stone quarries, and placer gold mines. Sometimes even iron ore and coal may be obtained from open workings. Then there are the mines proper. In them the minerals wanted are far beneath the surface, so pits are dug, and tunnels opened from the pits in various directions. Most of our coal is obtained in this way. Copper, gold-bearing quartz, and iron are also often found far under the surface. Lastly, there are the wells. These wells are often driven to greater depths—thousands of feet. In the United States we obtain gas, petroleum, salt, and sulphur by means of wells.

**Mining a Man's Work.**—Many occupations are open to boys and girls alike, but the work of mining cannot be considered suitable for a woman. A hundred years ago in England girls and women worked regularly in the coal pits. But when this was looked into by a committee of Parliament, conditions were found to be so bad that laws were promptly passed forbidding girls and women to work underground at all. Many of our states have similar laws, and all of them should have.

**Mine Work.**—The various tasks around the mine may be divided into three main groups. The one group of workers may be called the planners and managers. They have to solve the problems of finance, of employment, and of sales. These are such problems as the manufacturer also has to solve. They are the ordinary problems of any business. In a small way every farmer has these same questions to answer if he is to make his farm a success. The next group of workers are the



graduate mining engineers. They study the earth and try to find where the desired minerals are. Then they plan the mine and take care of such questions as how to drain the water out, how to keep the miners from smothering in the foul gases of the mine, and how to



*Courtesy Anaconda Copper Mining Co.*

#### ELECTRIC LOCOMOTIVE IN A COPPER MINE

Long trains of ore cars are hauled by electric power which in modern mining has displaced the mules formerly used for this work

get the minerals out as cheaply as possible. The third group are the miners themselves. These are the men who actually go where the minerals are, remove them, and send them to the surface. This group may be further divided into the skilled or certified miner and the unskilled helpers. Especially in coal mines it is necessary to be sure that a miner, before being per-



mitted to cut coal, is properly trained. Otherwise serious accidents and loss of life might result.

**The Manager.**— This is hardly a position for a young man to look forward to unless he possesses special qualities which would enable him to be a big business man in almost any field. A man who has made good as a manufacturer, merchant, or banker sometimes finds that he is forced to take over some mine in which he is interested. It has been shown that, under these circumstances, he is just as likely to be successful as a man who has managed nothing but mines all his life.

**The Graduate Mining Engineer's Job.**— These men are trained in the School of Mines at some university. There are several such schools at our state universities. The work at the school is made more practical by real work in mines of various kinds, so that by the time students have finished their courses, they are ready for the responsible work that comes in their line. An important study for these students is Geology — the science which treats of the structure of the crust of the earth.

**The Miner's Job.** Modern inventions have done much to improve the condition of the miner. In former times, the worst sentence a criminal could get was to be condemned to work in the mines. Now we have air drills, electric lights, steam-driven ventilating fans, and power hoists. The use of explosives also makes the miner's work much easier. To be a miner a man must learn how to handle these machines and explosives. He must know something about the rocks and how much strain they will bear, or he might be caught in a fall of the rocks.

**The Romantic Prospector.**—A prospector is one who wanders around hunting for valuable minerals and metals. Almost everybody has read wonderful stories of a prospector "striking it rich." Sometimes he has found gold in California or in Alaska. Sometimes the traveler has bought some shining pebbles from the children of the Dutch settler for a few shillings and sold them in London for \$350,000 when he found out that they were really diamonds. Or a valuable bed of nitrate or borax is discovered. All this makes wonderful stories to read. We would all like, immediately, to load a burro with beans, gold-washing pans, picks, and shovels, and turn prospector. But while we hear much of the successful prospector, there is little said of the many men who spend all their lives wandering about barely making expenses. Most of them, if they would settle down and save a little each year from their earnings, would be worth a lot more money by the time they are old.

**The Outside Investor.**—The pet name for persons who have never seen a mine, and who would be little



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**DRILLING THE HOLE FOR A BLAST**

Electric or compressed air drills are used to make the holes for the blasting powder. The explosion shatters the wall and the broken rock is easily loaded into mine cars

wiser if they did, but who nevertheless hasten to give their money to the first man who can tell



*Photo. Doubleday Page Syndicate, N. Y.*

#### THE PROSPECTOR

Most mines are discovered by the prospector, seeking wealth in the ground with pick and shovel

crease next week or next month, or that the oil-well will surely be a gusher, the best plan is to advise the agent to go ahead and make all the money himself without giving you a share. If you want

a good mining yarn, is "SUCKER."

The gentlemen who make a good living by giving beautifully engraved sheets of paper for this money have a regular system of keeping lists of names and addresses of such people. Such a list is a "sucker-list" and commands a high price, depending upon how "easy" the suckers are. If you are told that this is the chance of a lifetime, and that the shares will certainly in-

to be a miner, take a pick at some mine or quarry and earn good wages. Do not turn these wages over to the skilful advertiser.

There are, of course, men who are engaged in the legitimate business of promoting new enterprises, or of selling shares in companies that are earning large returns honestly. The person who has saved part of his income ought to have the chance to invest it where it is safe and at the same time where it will yield some return to him. The mistake is made when the would-be investor allows himself to be dazzled by the promise of an extravagantly high return.

**The Production of Minerals in the United States.**—The miners have increased their output most wonderfully in the past thirty years. In 1890 our mines pro-



*Photo. Doubleday Page Syndicate, N. Y.*

**THE PLACER MINER**

Working in the bed of streams, he washes the gravel in the hope of finding nuggets of gold

duced metals worth \$300,000,000, and other products worth \$310,000,000. But in 1920 we have these amazing figures: Metals, \$986,000,000 and other products, \$3,662,500,000. The invention of the automobile, calling for great increases in the oil supply, has been partly responsible for this increase.

Here are the figures for some of the leading minerals for 1920:

	<i>Amount</i>	<i>Value</i>
Asphalt.....	920,632 tons	\$11,033,804
Cement.....	95,820,997 bbls.	178,981,533
Coal, Anthracite.....	80,799,867 tons	452,304,903
Coal, Bituminous.....	406,925,000 tons	1,237,000,000
Copper.....	505,586,098 lbs.	65,221,000
Iron ore.....	26,652,528 tons	89,745,308
Natural gas.....	807,670,000,000 cu. ft.	200,302,000
Petroleum.....	469,639,000 bbls.	753,300,000

**The Demand for Men in the Mining Industries.**—The mines of the United States do not, at this time, seem to need more workers. In fact, there seem to be too many workers already in some of the mines. There are about 734,000 coal miners in the country, and for several years they have been working on part time. When there is not enough demand for the product to make men work more than 120 days in a year, there seem to be too many at work. It has been estimated that the coal industry would be better off if at least 200,000 of the miners would turn to other occupations. The ones who remain could easily supply the demand. There are about 86,000 men at work getting out petroleum, and less than 40,000 each for copper, for iron, and for the precious metals. So there seems to be little



inducement to enter this trade. But for the boy who can go to the school of mines this is a different matter. There is always an opening for the graduate with a good record, and the returns are very good.

**Mining as an Occupation.**—A man who decides to be a miner must make up his mind to endure many things that a farmer does not have to think about. A



*Photo. Brown Bros., N. Y.*

#### ANTHRACITE COLLIERY

Coal, hoisted from the mine shafts at the right, is crushed, cleaned, and sorted into sizes in the large building at the left

farmer, for instance, can keep on improving his farm, making it more and more productive each year. Recently the French Government found a farm in Normandy that had been farmed by the same family for nine hundred years. But the home of a miner cannot be permanent like that. As soon as the mine is worked out, or the wells pumped dry, he must move on to a new field. The surroundings of his home

cannot be made as pleasing as those of a farmer. In many cases his house is a kind of temporary shack. The work itself is dangerous. In a coal mine the worker must look out for the choke-damp or the dreaded fire-damp. An explosion of fire-damp may destroy a score of lives in a moment and stop the work in the mine for months. Men are obliged to work in the dark, with the air full of irritating dust, and in the ever-present danger of falling rocks. Even in the open workings there is danger from premature explosions and falling rocks. Here are some of the figures for injuries in quarries:

<i>Year</i>	<i>Deaths</i>	<i>Injuries</i>
1913.....	183	7,739
1914.....	180	7,836
1915.....	148	9,671
1916.....	173	13,427
1917.....	131	13,242
1918.....	125	8,719
1919.....	123	9,199
1920.....	178	11,217

These are the figures for the entire United States. We must remember that there are not more than about 80,000 quarry workers. This means that a very large fraction of them is injured each year.

Mining has its advantages as well as disadvantages. Wages in a mining community are usually high, and a thrifty person can easily save enough when he is working to keep himself during dull times. Modern safety devices are cutting down the dangers, and working hours are short enough to allow plenty of time in the open air each day.

**The Service of Miners to the Community.**—Even if mining is so dangerous and so disagreeable, the miner may feel that he is giving important service to the community. Our modern civilization is dependent largely upon metals and other mineral products. Each



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#### A SILVER MINING CAMP

Most mining camps consist of a few ugly houses set on a scarred hillside man, woman, and child in the United States uses each year 300 pounds of iron, 5 pounds of copper, 160 gallons of petroleum, 5 tons of coal, and other products in proportion. We might have a high civilization without these minerals, but certainly it would be a different one. It is the miner who makes our kind of civilization possible.

## THINGS FOR PUPILS TO DO

Questions for discussion in class.

How is it possible for each person in the United States to need 300 pounds of iron each year? What are some of the other uses of copper besides coining it into pennies?

Why does each person need five tons of coal each year? Make a list of some of the things done for you by burning coal besides keeping the house warm in winter.

If you were asked to do without either farm products or mine products, which of the two would you give up?

Think over some plan to run automobiles when all the oil wells are pumped dry. How do they run automobiles in Hawaii? What fuel did they use in Germany during the war?

Which makes a better bridge, steel or concrete? Which bridge would last the longer?

When the coal supply is exhausted, what shall we do for fuel? Do you know what is meant by "white coal"? How is your state supplied with "white coal"?

Problems to be studied outside of class.

Make a list of the things in your house which originally came from mines.

Make a list of the mineral products of your county. Are they obtained from open workings, mines, or wells?

What are some of the mineral products used in your state that must be brought in from some other state or country?

## BOOKS FOR PUPILS TO READ

## Stories and Fiction.

THOSE BLACK DIAMOND MEN.—*William F. Gibbons*. Some of the humors and heartbreaks of anthracite coal-mining.

BOY WITH THE UNITED STATES MINERS.—*Francis W. Roll-Wheeler*. This is a very good story about the various problems of mining and what a boy can do in preparing for this occupation.

DERRICK STERLING.—*Walter Scott Monroe*. A story of the mines.

**Other Books.**

BOY SCOUTS OF AMERICA.—The handbook has some interesting facts about the work of the miner.

THE STORY OF GOLD AND SILVER and THE STORY OF IRON.—Both of these books, written by E. I. Samuel, give a good idea of these metals in history and in modern industry.

THE MEN WHO ARE MAKING AMERICA.—*B. C. Forbes.* Pages 173 to 196 and 319 to 327 tell of men who were successful in mining gold, silver, copper, and zinc.

THE IRON BOYS IN THE MINES.—*James R. Mears.* This is especially interesting for younger boys to read.

DIGGERS IN THE EARTH.—*Eva M. Tappan.* The various chapters take up the work of miners with different minerals—coal, gold, silver, copper, petroleum, aluminum, salt, etc.

VOCATIONAL ARITHMETIC.—*Harry D. Vincent.* Page 34 deals with problems arising from quarry work.

A YEAR IN A COAL MINE.—*Joseph Husband.*



## CHAPTER IX

### MANUFACTURING

**Manufacturing—What It Is.** When the farmer, the lumberman, or the miner takes things from Nature, many of them are not ready for use. We like to sit on



*Courtesy Surpass Leather Co., Philadelphia*

#### MAKING LEATHER

The process of making kid shoes and gloves from goatskins. Most of the skins come from China

chairs and have our food served on tables instead of on logs. When we come to eat, we like bread and sugar rather than a bowl of wheat-grains and a section of sugar cane. We like to have fine, well-woven materials

for our clothing rather than the raw fibers of silk, cotton, or wool, or the skins of animals. A great many people prefer to ride in carriages or automobiles rather than to walk. Once when Washington's army was marching through Pennsylvania a farmer sold a herd of cattle to the quartermaster. The cattle were speedily reduced to beefsteaks. Then some of the soldiers, whose shoes were worn out, cut out circular pieces of the skin of the cows, ran a kind of drawstring around the outer edge of the circle, and drew them tight around their ankles. But we prefer selected leather, carefully tanned, and made into comfortable shoes. Perhaps the Continentals would have preferred this, too! The manufacturer, then, is the person who changes the shapes and quality of things so as to make them more desirable.



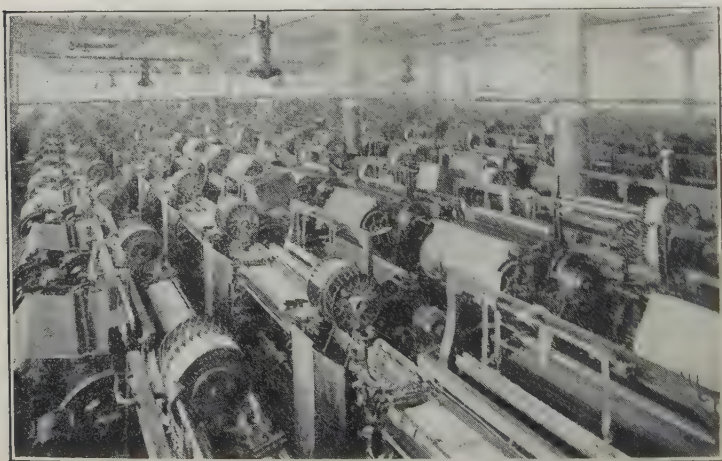
*Photo. Keystone View Co., Inc.*

#### WEAVING BY HAND

All fabrics were woven on such looms  
in olden times

**Manufacturing—Its History.**—There are not many parts of history as interesting as the story of how man has learned to make things. The word itself means “make by hand,” and that is how things were made for thousands of years. The ancient Greeks and

Romans rather despised this kind of work, and had slaves to do most of it. But it was in the Middle Ages that a system of manufacturing was brought to great perfection. Under this system societies or "guilds" were formed. In any city all the skilled workers in gold, for instance, belonged to the "Goldsmiths' Guild." There were, first of all, the master workmen, who



*Photo. Coleman's Studio, Montgomery, Ala.*

#### WEAVING ROOM IN A GREAT COTTON MILL

Contrast these looms with the primitive loom used by hand weavers owned shops where the goods were made, and stores where they were sold. In the shop you could see a number of "journeymen"—men who had learned their trade and who were working for wages. There were also a number of "apprentices"—boys who were learning the trade. These boys received no wages, but the master supplied them with food, clothing, and shelter. They were usually obliged to serve seven

years; in the case of the goldsmiths, ten years. If they could then produce a good piece of work, they were passed by the masters of the guild and became journeymen—later perhaps, masters.

In some parts of the world the guilds became so strict and jealous that they refused to pass many perfectly good apprentices. These men could not work in the towns where the guilds had authority, but many of them moved out into the neighboring villages where the guilds could not control them, and carried on their trades. Certain wealthy merchants found this out, and started the custom of taking raw materials out to them, getting them to do the work, and collecting the finished product. This system was called the "Domestic System" because the workmen worked in their own homes (Latin, *domus*, a home). In England, two hundred years ago, nearly all the spinning and weaving was done by "cotters" or people living in cottages over the countryside. In Switzerland, even today, a great many watches are made by the peasants during the winter months, the material being taken out to them in the fall and the finished product being collected in the spring.

But with the invention of machines driven by mechanical power all this was changed. Today these machines, a great many of them, are gathered into one great building so that it is easy to get the power to them. The workmen go at regular hours to these buildings to work. This is called the Factory System, and this is the system that the boy or girl who is interested in manufacturing must study today.



**Handicrafts.**—As we have seen, the word “manufacture” means “make by hand.” But the process of



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THE OLD-FASHIONED SPINNING WHEEL

Turning cotton fibers into thread

making goods has so largely become a machine process, that we now use the word “handicraft” to describe the art of making things by hand. In spite of the wide extension of machine work, some things are still made by hand. In many of the smaller towns and villages the blacksmith, with his forge and anvil, continues to work iron and steel into things needed in the community. Or the village wheelwright continues to build and repair wagons, sleds, and wheelbarrows for his neighbors. In some districts an old-fashioned clockmaker or cabinetmaker finds plenty of work. In

the old days many of these men were real artists, able to design new and beautiful types of their product.



Indeed, many manufacturers today eagerly search for good types of these old, hand-made goods for patterns for their workmen. The names of some of these old craftsmen are remembered even today.

**Kinds of Manufacturing.**—It is almost impossible to make a full list of the different kinds of manufacturing. Manufacturing is a part of farming, of building, or of mining. The farmer who makes butter or cheese, the builder who shapes lumber, steel, or concrete to fit into his buildings, and the miner who sharpens his tools or breaks coal into commercial sizes—all these are actually manufacturing. But to avoid confusion the United States Census Bureau has given us the following classification:

- Chemical and Allied Industries

- Cigar and Tobacco Factories

- Clay, Glass, and Stone

- Clothing

- Food

- Harness and Saddle Industries

- Iron and Steel

- Other Metal Industries

- Lumber and Furniture

- Paper and Pulp Mills

- Printing and Publishing

- Shoe Factories

- Shoemakers and Cobblers

- Stonecutters

- Structural Iron Workers

- Tanneries

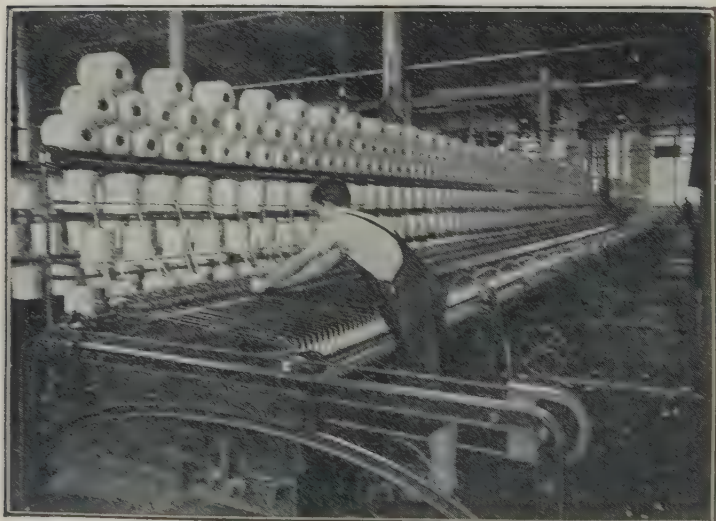
- Textile Industries

Tinsmiths and Coppersmiths

Upholsterers

Miscellaneous

Of course, the boy who is interested in manufacturing will select one or another of these industries for his field of work.



*Courtesy American Woolen Co.*

#### MODERN YARN SPINNING

Contrast this huge machine with the spinning wheel of early days

**The Work of the Manufacturer.**—The work of the man who makes a success of manufacturing is along two distinct lines. In each of these lines there is opportunity for the boy or girl who enters this field of work. The large factory has a large number of employees in each branch. First, the goods must be produced. This is distinctly the work of manufacturing. Second,

the goods must be placed on the market. This work differs little from merchandising, and many of its problems will be treated under that head. These, then, are the two main divisions of the job.

**Production—The Learner.**—The boys and girls who go into production must, of course, begin as learners. But the period of learning is very much shorter than it was four hundred years ago. There is now no need for seven years of unpaid apprentice work, for the reason that many of the tasks that formerly required a trained hand are now done by machines. It requires only a short



*Courtesy Ford Motor Co.*

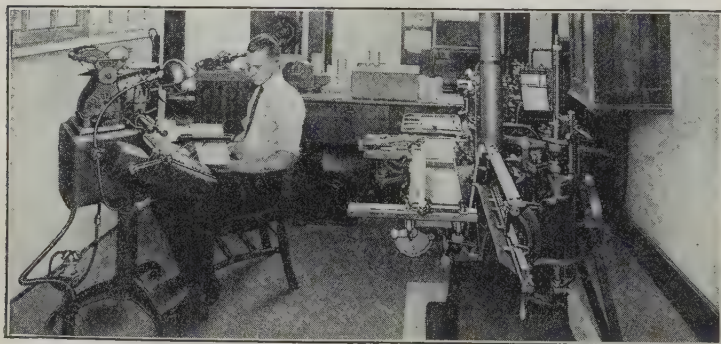
#### MAKING AUTOMOBILE PARTS

Girls soon learn to handle machine tools and perform many operations requiring delicate handling better than men

time to learn to run the machine, and the work turned out will be more accurate than that which was turned out in the old days by the best trained handworkers. There are, as we shall see, some branches of manu-

facturing in which two or three years of learning must precede a job at full wages. But most of the work of handling machines can be learned in a few weeks or months.

**Skilled Workers.**—When the learner has acquired the skill which entitles him to be trusted with a machine or with several machines, he begins to earn full wages. The amount paid to him is based upon a kind of average



*Courtesy Lanston Monotype Machine Co.*

#### TYPESETTING MACHINES

At the left is the keyboard where the paper roll which controls the automatic typesetting machine (at the right) is made

production in that sort of work. In some of the industries piece work enables the more skilful to earn more than the slower ones. Although wages paid in our American factories are high, it is only fair to point out that there are several ways in which a man may lose his job and be obliged to spend some time in idleness. A change in the styles may throw many skilled men out of work. There are not nearly so many wig-makers as there used to be in the days of King Charles II of England. A new invention may throw a thousand

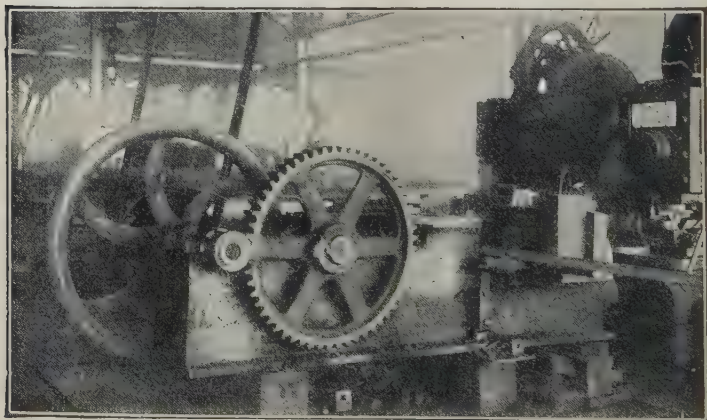
men out of work and make all the time they spent learning a trade wasted. Thirty years ago all the type for books and newspapers was set by hand. About that time a machine with a keyboard was invented for this purpose. This machine is now in use in every large printing plant. For a time, however, the typesetters suffered many hardships because of this transition. One man, operating a modern bolt or nut machine, can produce more than fifty blacksmiths however skilful. These inventions not only make some trades unnecessary, but they throw many out of work because one man can do more than several could by hand.

This does not mean that in the long run inventors or machines throw people out of work. For instance, there are hundreds of workers employed on power-driven textile machinery today for every one of the old hand workers. But it is true that some workers may be thrown out of work for a time. What usually happens is that the alert ones study the opportunities opened by the new machinery and quickly prepare themselves for better jobs. Do you think that the young man who lost his job in a livery stable because of the increased use of automobiles is any worse off because he now has a job in a garage?

**Working Conditions.**—Anyone who has had the opportunity of examining an old factory building and comparing it with one built according to modern ideas will find many interesting differences. The wage-earner of former days was obliged to work with poor light in a badly ventilated building that generally had no fire escapes. Everywhere shafts were whirling and



belts were flying. Accidents were common. When he wanted to eat his lunch, he had to clear a place near his machine and eat cold food. But the new factory buildings have large windows, scientific ventilation, protected machines, good fire escapes, good lighting, and plenty of lunch rooms, and even small, well-



*Courtesy Carnegie Steel Co.*

#### UNGUARDED GEAR WHEELS

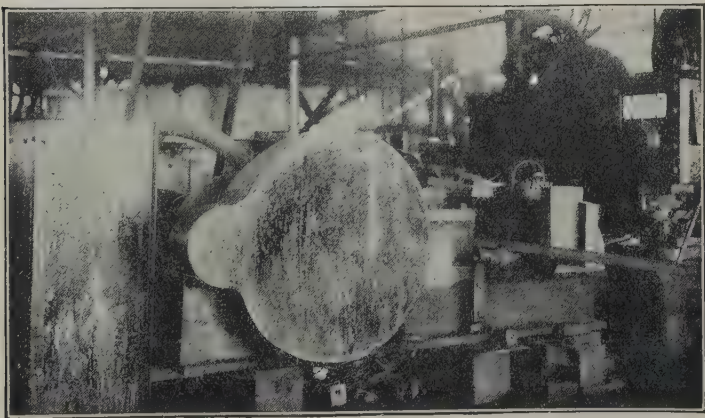
A menace to the workmen who through carelessness or accident might come in contact with the rapidly revolving wheels

equipped hospitals for the accident cases. Although the work may be wearisome and monotonous, working conditions are much more satisfactory.

**Some High-Salaried Jobs in the Factory.**—There are many positions open to the skilled worker who cares to spend some time in fitting himself for them. Many of these are open to girls as well as to boys. The training for these positions may be acquired in the factory or in special schools which are open in the large

manufacturing centers. For the person who likes responsibilities this work is much pleasanter than the routine of machine work.

**Designer.**—A person with some talent as an artist can easily fit himself for this occupation. In potteries, textile factories, wall-paper factories, or linoleum



*Courtesy Carnegie Steel Co.*

#### THE SAME WHEELS GUARDED

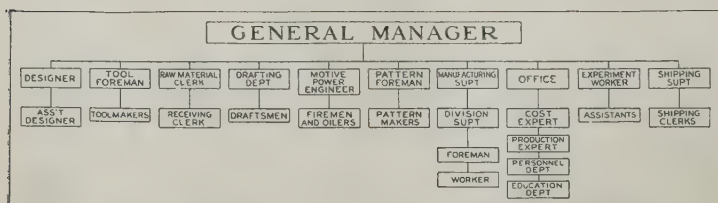
Steel covers have been put over all moving parts. Some manufacturers now regard this work as so important that they employ safety engineers to safeguard their workmen

factories the designer holds an important position. Some girls have made a great success of this work. The designer who can hit the popular taste, or who can foresee what the styles will be, is always in demand.

**Foreman.**—The boy who is ambitious to become a foreman must possess certain qualities. In the first place the foreman should be a thoroughly skilled workman. Only in this way will he be able to recognize good work and a good workman. Second, he should

have some ability as a teacher. It is often necessary for the foreman to show some learner or some new hand the best way to do a certain task. Last, he should be able to handle men without arousing ill-feeling and resentment. He should be able to give orders in such a way as to get prompt and courteous obedience from the men. This last is perhaps most important of all. Boys and girls who have or can develop these qualities are fitted for positions of foremanship.

**Production Experts.**—These experts are of two kinds.



THE DEPARTMENTS OF A MANUFACTURING BUSINESS  
Showing the opportunities open in each

The first kind has to do with the economical handling of the processes of manufacture. The position requires a high degree of ability, as well as a long period of training. Our universities are offering courses designed to fit men for this kind of work. Some of his problems have to do with the arrangement of the machinery so as to save as much of the handling of the partly manufactured goods as possible. The goods should pass from machine to machine without being trucked around all over the shop. The manufacturing process should be completed near the shipping room or store room. Problems of lighting, ventilation, and power must also

be solved. The best preparation for this work is a thorough engineering course at some university followed by a practical apprenticeship under a production expert.

**Handling the Workers.**—This is another field which is being carefully studied by the leading manufacturers of the country today, and specialists are required for it. These experts begin with the worker before he is hired, and keep track of him at all times. They are interested in such problems as: What are the workers' troubles? Are they contented and loyal, or is there great dissatisfaction? Is each workman on the job he can do best, or should he be shifted to something else? Why do men leave? What kinds of men are applying for work? Some of these experts suggest recreation of different kinds for the employees. Many large plants have baseball teams, and every effort is made by the owners of the factory to support such activities. There are even some factories that maintain recreation grounds where the workers can take their families for vacation or for picnics. The person who wishes to do this kind of work must have some knowledge of psychology and sociology. Men and women who have had a university training make the best experts in this field. It is a rapidly widening occupation, and well worth looking into by the boy or girl who has the chance to go to college.

**The Work of Selling.**—The work of finding markets, learning how much credit you can give to retailers, and finding at what prices goods can be sold so as to make a profit, is the same kind of work a merchant has to do,

and calls for the same kind of ability. It is very easy for a traveling salesman, a credit man, or an advertising man to work for a merchant if he has learned this work while in the employ of a manufacturer.

**The Cost Expert.**—This man must first of all be well trained in bookkeeping. Any bookkeeper can tell, when he strikes his balance, about what it costs to put



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#### MAKING RUBBER SOLED SHOES

Automatic machinery does most of the work, but the final touches must be put on by hand

each item on the market. But the cost expert must be able to tell much more than this. He should know not only what each stove or pair of shoes costs when finished, but should be able to tell what each step in the making process costs. These costs

he must be able to divide into the de-

tails, telling what the labor costs, what part of the cost should be credited to the machine and to raw materials, and what part of the selling cost each unit of the product should bear. Further, he must be able to tell what each machine in the shop is earning for the owners, and how much the machine should produce before it is worn out. The boy who is fond of figures can find in this field a great opportunity.



**The Experimental Worker.**—Besides the actual producing workers and the selling force, many modern manufacturers have experimental shops in which a staff of highly trained people is constantly at work trying to discover new products, or to improve the



*Courtesy American Stores Co., Philadelphia*

#### BREAD MIXING MACHINES

Modern bakeries manufacture better bread for a lower price than the home-made loaf

present output of the factory. Chemical industries, paint shops, and manufacturers of rubber goods, automobile tires, etc., are always on the lookout for young men who are able to go ahead with this kind of work. In the electrical industry the men in the research laboratory are, every year, adding largely to our knowledge of this mysterious force. Although Mr. Edison has seen fit to make fun of college-trained men,

yet such a training is almost necessary to the young man who wishes to do research work in industry.

**Opportunities in Manufacturing.**—The number of persons needed in the manufacturing industries in the United States is very great. There are always openings in almost any industry for the boy or girl who can make good. For instance, in 1920 according to the census there were nearly 125,000 skilled and over 85,000 unskilled workers in clay, glass, and stone. In iron and steel there were about 730,000 skilled and 690,000 unskilled workers. In the food industries there were 160,000 unskilled and about the same number of skilled workers, not counting 85,000 bakers. Working in lumber and furniture there were 320,000 skilled and 170,000 unskilled employees. The textile industry gives employment to about 170,000 skilled and 873,000 unskilled workers. Thousands of workers find employment in other industries. In the whole United States there are nearly 11,000,000 wage-earners in the various manufacturing industries.

**Chances for Wealth.**—Manufacturing isn't all pleasant work but it does give plenty of opportunity to the person whose ambition is to get rich. A large number of the wealthy people of the United States started as poor boys, and made large fortunes as manufacturers. You are familiar with the names of George Westinghouse, Andrew Carnegie, and Henry Ford. They found out some great need of the people and by their ability to plan, manage men, and satisfy the needs of large numbers of people, they made fortunes.

**Opportunities for Service.**—The farmer will always

have work. The worker in the factory, perhaps, must endure periods of idleness. Yet the work of the factory employee is very necessary in our modern, complex civilization. The worker can feel that he, too, is helping to make the things that feed, clothe, and warm his fellow men. If he can find some method of giving them cheaper and better food, clothing, or furniture, he can feel that he, too, serves humanity.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

What are the chief manufacturing industries of your county? of your state?

Are there any schools near you that teach manufacturing processes? What are some of the trades taught in these schools?

Which factories in your town offer learners' courses for the purpose of training the skilled workers they need?

What manufactured articles used in your community must be brought in from other states? other countries?

Does your community have a Chamber of Commerce? What does the Chamber of Commerce do to bring new industries into the town?

For what special industries is your town peculiarly fitted? Are there certain raw materials that ought to be worked up into useful products?

Problems to be studied outside of class.

Find out what wages are paid to skilled workers in your town. What wages do unskilled workers receive?

What are some of the laws of your state, the purpose of which is to improve working conditions? Can you suggest needed additions to these laws?

Could the Federal Government, by its tariff laws or by its interstate commerce laws, do anything to improve the condition of the industries of your community?

Ask some factory worker of your acquaintance how many days he has work in each month or each year. Find out why he was idle. Was it because of illness, shutdowns, strikes?

If you know some blacksmith or wheelwright, ask him whether he would recommend his trade to young men. Ask him to give the reasons for his answer.

### BOOKS FOR PUPILS TO READ

#### Stories and Fiction.

PELHAM AND HIS FRIEND TIM.—*Allen French*. This gives some idea of the problems of dyeing in the textile industries.

BOY WITH THE UNITED STATES INVENTORS.—*Francis W. Rolt-Wheeler*.

#### Other Books.

THE GARMENT TRADES.—*Edna Bryner*. This book has chapters on designing, cutting, and factory work.

THE PRINTING TRADES.—*Frank L. Shaw*. Chapter II tells of the work in the composing room.

WHEN THE WORKMEN HELP YOU MANAGE.—*William W. Bassett*. This is an interesting book for the person who looks forward to becoming a foreman.

MANAGEMENT AND MEN.—*Meyer Bloomfield*. Another book for the prospective foreman.

THE PRIMER OF SCIENTIFIC MANAGEMENT.—*F. B. Gilbreth*. A book suitable for boys and girls who wish to learn about these problems.

EDUCATION FOR INDUSTRIAL WORKERS.—*Herman Schneider*. A valuable book for the worker.

THE STORY OF IRON.—*E. I. Samuel*. Has some chapters on the problems of the molder and coremaker.

LIVE ARTICLES ON ACCIDENT PREVENTION.—*Underwriter Printer and Publisher Co.* Nos. 6 and 68 to 78, hazards in glass-manufacturing.

JEWELRY MAKING AND DESIGN.—*Rose and Cirino*. Pages 31 to 42 have to do with work in gold.

THE IRON BOYS IN THE STEEL MILLS.—*James R. Mears*. Here we read of the nature of the work in these mills.

LEATHER-WORKING.—*Boy Scouts of America*.

WHAT CAN A YOUNG MAN DO?—*Frank West Rollins*. Chapter XVI tells of manufacturing.

HOW TO FIND FACTORY COSTS.—*C. B. Thompson*.

STARTING IN LIFE.—*Nathaniel C. Fowler*. Pages 39 to 46 deal with the young man or woman starting in a factory.

GREAT INVENTIONS.—*Elmer E. Burns*. This entire book should be helpful to the factory worker.

THE GIRL AND THE JOB.—*Hoerle and Saltzberg*. Pages 88 to 91 and 221 to 224 tell about millinery.

MAKERS OF MANY THINGS.—These chapters are all good. Pages 25 to 35 tell how logs and rags become paper.

THE STORY OF LEATHER.—*William W. Bassett*.

THE METAL TRADES.—*Rufus R. Lutz*.

INDUSTRIAL WORK FOR BOYS.—*A. E. Pickard*. How to make things out of wood. Part of the book tells of school projects, and part tells of things to do at home.



## CHAPTER X

### SKILLED MACHINE TRADES

**What Is Meant by Skilled Trades.**—Our complex civilization is largely based upon machine-made goods. As we saw in the last chapter, millions of people work in factories, producing hundreds of things that we use



*Courtesy Philadelphia Orchestra*

#### A GREAT SYMPHONY ORCHESTRA

Each of the 108 men in this organization is an accomplished musician who earns a good salary and in addition makes a considerable income by giving lessons

in the home, school, office, and on the streets. We also saw that learning to run most of the machines that help make these goods is not difficult. But there is still room for the person who is willing to spend time in acquiring a high degree of skill along certain lines of work. Skill can be acquired only by years of constant practice. Some of the occupations in which skill is needed are grouped with the professions. Dentistry,

surgery, and music are really professions. Some phases of music, together with painting, sculpture, and architecture, may be grouped with the fine arts. But there are still other occupations open to the person who does not enjoy doing the same thing over and over again as the machine operator must do. These occupations do not require as much training as the surgeon or the artist needs, but often they require fully as much skill. We call such occupations skilled trades.

**History of Skilled Trades.**—Most of the trades of which this chapter treats have arisen within the last two hundred years. Inventors dream of new applications of energy or force. But if nobody can build the machine, or if there is nobody to operate it, the dream of the inventor cannot come true. But it is an interesting fact that every time a demand arises for a certain skill, before long there are plenty of young men who are willing to undertake acquiring the skill. When steam engines were first invented, one of the most perplexing problems was how to bore the cylinders. But today there are hundreds of men who can bore an engine-cylinder so accurately that the result will be less than one one-thousandth of an inch out of true. There are thousands of men who can, today, take down an automobile, repair or adjust whatever is the matter with it, and put it together again. We may feel sure that, in the future, whenever there may be a demand, skilled workers will develop very soon.

**What Is Needed to Enter a Trade.**—The first great need is a desire to work at the trade. Skilled work is work that most people love to do. It is indeed a rare

thing to see a really skilled, trained worker who hates his job. The next requisite is patience. Our American life is so hurried, and our young people want to see results so quickly! Visit any good museum and examine some of the Chinese ivory or jade carving, or a genuine piece of Japanese lacquer work, and ask your-



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#### IVORY CARVING

Few Americans would have the patience to do this delicate work self how many American boys of your acquaintance would have the everlasting patience to learn such fine work. If a girl has the opportunity to examine some really fine lace, ask her if she would have the patience to sit in a damp cellar day after day to make the cobwebby fabric. Next, the learner needs perseverance. He should never be satisfied to be moderately skilled. Moderate skill is almost as bad as a "moderately good" egg.

The next thing the learner needs is real ability along the lines of the trade. Some workers are born with certain abilities strong within them. Of course, this means little if the other requisites are lacking, but the other requisites mean little if ability is lacking. Finally, a learner needs a good teacher. If the teacher is himself careless and does things in a haphazard way, he may ruin the chances of the learner to win success in the trade. In the old days the craftsman with the best reputation not only got his apprentices free, but a boy's father sometimes paid a handsome bonus to get his son under so good a teacher. Even a journeyman took lower wages for the privilege of working for a short time under so good a master.

**The Blacksmith.**—"The smith, a stalwart man is he," says the poet. The boy who enters this trade may be sure of getting enough exercise. He will also have to grow mentally, because the blacksmith is always meeting new problems, and the solution of many of his problems requires the most careful thinking. In fact, many of the old-time blacksmiths are now managing shops for the repair of automobiles and tractors. In skill, they are almost equal to trained machinists. Again, the blacksmith may specialize in horse-shoeing. This requires a high degree of training and skill. If the horse's hoof is properly prepared, and if the shoe is properly fitted and fastened, the horse can work much better than if the work is done less skilfully.

In many cases the blacksmith whose shop is in the country or in a village can secure the agency for a number of farm machines. Selling these to the farmers



of the neighborhood increases his income. In fact, an advantage that most skilled trades have is that a person can easily establish himself in business. We find blacksmiths operating their own shops in many instances. The young man who wants to have his own business would do well to consider learning this trade, especially if he must start a business without much capital.



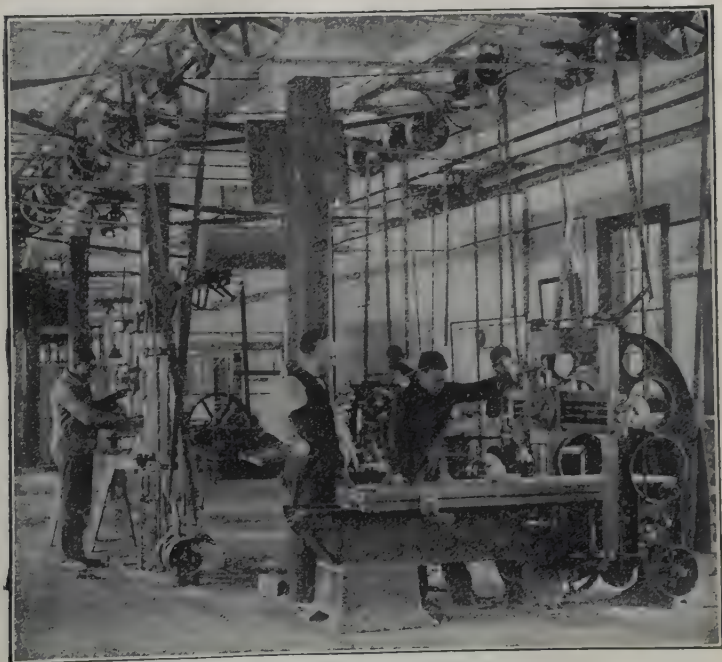
THE VILLAGE BLACKSMITH

Use on the farm of all kinds of mechanical devices provides many repair jobs for the man able to do the work

**Preparing for This Work.**—Owing to the fact that this trade requires careful training and hard physical work, the number of blacksmiths is not increasing as fast as it should. There are, as a result, plenty of opportunities in this trade. The learner should have a high school training, with plenty of physics, chemistry, and mathematics. If he can get some mechanical



drawing, so much the better. If there is a shop in the neighborhood, he should spend some of his spare time around the shop, observing how things are done. He should then, if there are no trade schools in the com-



#### LEARNING TO BE MACHINISTS

Training boys to handle powerful machine tools

munity, apply as an apprentice or helper, and work for three or four years. After a few years as a journeyman he is ready to start for himself.

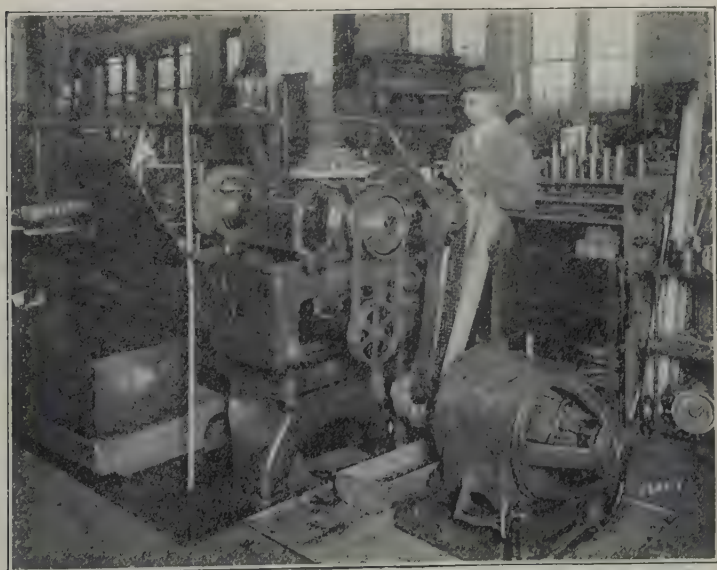
**The Machine Shop.**—We have already, in the chapter on manufacturing, studied briefly some of the skilled trades connected with the construction of machinery.

But it is worth while to study some of these a little more fully. So many of our boys are interested in machines, and so many like to work around machinery, that they should know more about the possibility of earning a living at this work.

**The Machinist.**—The machinist is the man who builds and repairs machines. The factory is a large building in which the producing machines are gathered. But these machines themselves must come from somewhere. Back of the machine working-producer stands the machine constructor. An old-fashioned spinning-wheel or hand loom, or even a water-wheel, or windmill, might be built from wood by any fairly skilled carpenter, with perhaps a little help from the blacksmith on the iron parts. But one only needs to look at a great modern spinning-frame with its hundreds of spindles, a Jacquard loom weaving figured rugs automatically, or one of the tremendous turbines that transmits water power to an electric generator, to see how helpless a carpenter or blacksmith would be in the presence of such a problem. Here is where we need the trained machinist.

**The Machinist in America.**—Although the Industrial Revolution did not start in America, we have gone further in the way of producing goods by machinery than any other country. As a result, many of the tasks that formerly required a skilled machinist are now done on automatic machines. In Europe, for instance, each part of an automobile is carefully adjusted to the place in the machine where it belongs. In America the parts of cheaper cars are carefully and accurately worked to

the correct sizes, so that all the assembler has to do is to take them from the bins and put them together. The European assembler must be the most skilled machinist in the shop. The American assembler need not be a machinist at all.



*Courtesy Link Belt Co., Chicago*

#### AN AUTOMATIC TURRET LATHE

Once adjusted this machine will make small machine parts in duplicate with amazing accuracy

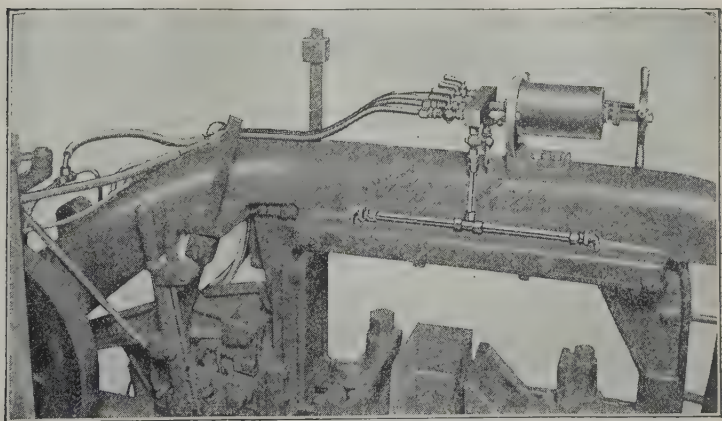
**The Work of the Machinist.**—The machinist, then, is the man who, with the drawings and measurements before him, takes the bars of brass, rods of iron or steel, or rough castings from the foundry, and works them accurately to the shapes and dimensions called for in the drawings. These parts are then assembled into

the finished machine. The tools needed by the machinist are planers, lathes, drills, milling-machines, files, cold-chisels, emery-wheels, polishers, and so on.

**The Learner and His Preparation.**—The boy who wishes to be a machinist should study all the mathematics he can. A night school student, whose work by day was in a machine shop, told his teacher a few years ago of a problem which had come up in the shop which had them all puzzled. Then this student remembered something he had just learned in trigonometry and solved the problem of cutting the gear with the greatest ease. The learner should study physics as fully as possible. And history, especially industrial history, proves very helpful. To learn his trade, if he cannot go to a trade school, he ought to get into a small shop, where a great variety of tasks will come to him. A large shop keeps a man on the same task and the same machine all the time. This is especially true of automobile factories.

**Draftsman.**—The machinist, as we have seen, works with a drawing before him. This drawing is so made that the machinist can understand all the details of material, dimension, shape, surface, and relation to other parts. This means that the man who makes the drawing must be able to indicate all these things in a way that the machinist will understand. The designer makes a kind of rough draft, in which these facts are specified. The draftsman then puts them all into the drawing, making what is called the working drawing. From this working drawing tracings and blue-prints are made for use in the shop.

**The Learner.**—The boy who is not fond of physical activity, but who has the patience to sit at a drawing board for hours, working out the completed design, is the best type for this work. He should not be what is known as the nervous type. He should be neat and accurate. Since draftsmanship may lead to the position of designer, the boy who is ambitious should have as



*Courtesy Keystone Lubricating Co., Philadelphia*

#### PROTECTING THE WORKMAN

The small cylinder on the top of the machine contains grease which is forced by the hand wheel to all bearings, thus eliminating the danger of reaching for grease cups near moving parts

complete an education as possible. Mathematics—especially geometry—mechanics, history, and physics are all helpful. The learner need not have artistic ability. In fact, such ability might be a hindrance rather than a help.

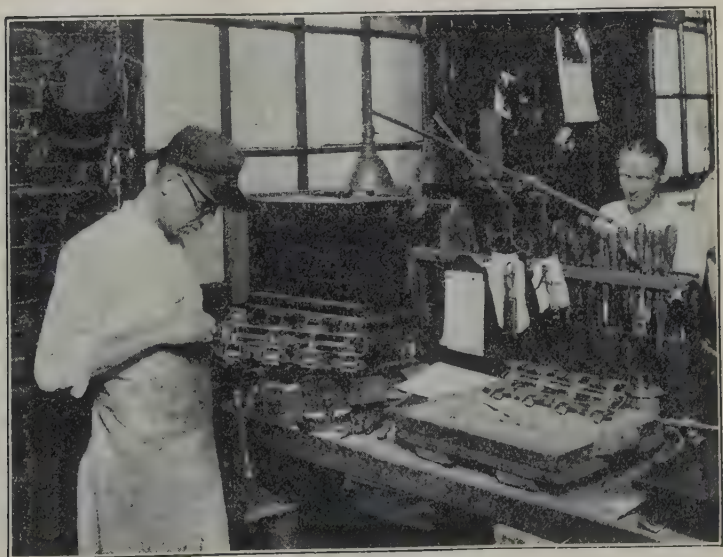
**Designer.**—The designer should be familiar with drafting and machine-shop practice. In addition to these, he should have a strong power of imagination—



in fact, he should have the inventive type of mind. Problems are constantly being presented to him for solution. Sometimes these solutions are real and important inventions, bringing in great rewards to the designer. A designer, for instance, may be told that a certain machine is doing good work, but that it must be stopped from time to time to oil it, or to remove some of the scraps. He then plans remedies for these conditions. Or he may be asked to design a machine similar to one now in the shop, but planned for much heavier or much lighter work. A new cutting steel may be invented that makes it possible to run planers and lathes at a much higher speed. He must design machinery heavy enough to stand the higher speed. Or certain parts of a machine may be dangerous to the workman. The designer must plan a new machine which will not imperil the worker,

**The Learner's Preparation.**—In addition to the usual high school subjects mentioned as necessary for the machinist and draftsman, the designer should have a thorough training in such subjects as mechanics, strength of materials, foundry practice, and so on. For instance, the designer may have to decide upon the size of shafting that will be used to carry power to certain machines. He must be able to find out how much power these machines use, and whether they all need power at the same time. He then selects shafting of the right size. In this one problem, he may use his knowledge of mathematics, mechanics, and strength of materials and in addition he must use judgment or he may use shafting that is too heavy.

**Patternmaking.**—A great many things are made by melting iron, brass, or copper, and pouring the melted metal into a mold where it cools, taking on the shape wanted. The mold is prepared and the melted metal is poured into it by a molder. But in order to



*Courtesy Link Belt Co., Chicago*

#### THE PATTERNMAKER

Making an iron pattern for chain links. He must work very accurately to avoid trouble with the castings

make the mold he must have a pattern of the thing he is going to make. The patternmaker is the man who makes these patterns for the molder. The casting may then later be sent to the machine shop to be accurately cut for its place in the machine or the finished article. A great deal depends upon the patternmaker. He must construct the pattern so that there shall be as little

waste as possible. Waste means so much more metal to be melted and cut away, the result being a waste of fuel and of the machinist's time. Frames and pedestals for machines must be strong enough to stand the work of the machine. If they are too heavy, there is the added expense of constructing the factory building strongly enough to bear the added dead weight.

Foundry patterns are of two kinds. One kind is constructed as cheaply as possible, since perhaps only one casting is to be made with it. Others must be durable, for many hundreds of castings are to be made from them. But in either case the patternmaker knows that a slight mistake on his part will waste not only his own time and material but that of the molder as well. The patternmaker is needed in ornamental concrete work, in pottery, in glassmaking, in terra-cotta work, and in the rubber industry, as well as in metal work.

**Preparation of the Learner.**—The same qualities are needed in this trade as in the trade of machinist or designer. A boy who is interested in wood work rather than in metal can do his share of machine-building by making patterns. He should have a good high school training with emphasis on mathematics and science. The work is very attractive, and there is great variety in the problems of the trade. The trade can be learned in any good trade school, or a beginning can be made in a technical high school. These methods are generally better than learning by apprenticeship, because so much of the work requires a knowledge of mathematics and drafting.

**Molding and Coremaking.**—When a pattern is completed it is sent to the foundry, where it is placed in a box called a flask, and damp sand is rammed firmly around it. The pattern is then drawn out and the mold, as it is known, is ready for the molten metal. Where there are to be hollow or irregular places in the casting, cores of sand, hardened by baking, are sometimes placed in the mold. The metal is then poured into the molds. As soon as it cools enough, the castings are taken out and the sand is prepared for use again.



*Courtesy Link Belt Co., Chicago*

#### THE MOLDER

Pouring molten iron into the sand molds.  
Strength and skill are necessary

**Opportunities in These Trades.**—Coremaking can be learned in a short time. Where the cores are not heavy the work is often done by girls. If many cores of the same kind are to be made, coremakers are paid by the piece, so that wages depend upon the speed of the worker.

There are molders of all kinds. In the small foundries are to be found the all-round workman who can handle any job that comes in. There are molders who

are specialists in stove castings, others who make fine castings for lamps and statuary, and others who specialize on heavy work such as castings for large turbines and electric generators. A foreman molder must not only be a skilful molder, but he must know also how to heat the metal properly and what kind of sand to use. He must be able to tell the patternmaker what is wrong if the castings do not come out of the mold right. No work in the machine trades calls for more intelligence than the work of the foreman molder.

**How to Learn.**—Most molding work requires a strong body, a fine sense of touch, and plenty of intelligence. A boy who wants to learn to be a molder should take a trade or high school course specializing molding if he can. If he cannot do this, he should work as an apprentice or helper in a foundry. If he wants to advance to the position of foreman or foundry superintendent he must study at night. Training in chemistry is particularly helpful.

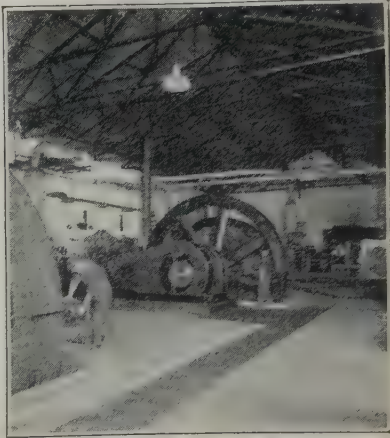
Because so much of the molding formerly done by hand is now done by machinery the foreman must be skilful in handling unskilled labor. This is best learned through experience by working with the machine hands in a foundry.

Although foundry work is dirty, there are more opportunities for an ambitious boy here than in any other part of the machine building industry.

**The Steam Engineer.**—Steam engineering is one of the skilled trades in which the responsibility of the worker is so great that in many states and cities he is obliged to pass an examination before being allowed to



take charge of an engine room. If the engineer wants to take charge of the engine on a steamboat, he must pass an examination given by the Department of Commerce of the United States. The engineer is in charge of the entire power plant. He must care not only for the engines, but also for the boilers, air-compressors, and electric generators. The line shafting and elevators are also under his charge. In a large plant he may have quite a large staff of oilers and firemen to assist him, while in a small plant he may have direct charge of everything himself. The work is very responsible, highly respected, and well paid.



*Courtesy Bryant Paper Co.*

**The Preparation of the Learner.**--A few technical schools offer courses that fit men for

#### ENGINE ROOM IN A PAPER PLANT

the trade of steam engineering. In the days when steam engines were a new thing, men learned the trade by working around in the engine room, perhaps starting as fireman or oiler. In fact, that is not a bad way to start even today. But the process of learning can be shortened a great deal by taking courses at such schools as Drexel Institute, Philadelphia, Carnegie In-

The engineer has charge of this department, including the boilers, engines, electric generators, pumps, and everything connected with the power supply

stitute, Pittsburgh, the University of Cincinnati, or any one of the schools offering such work. A bright boy who has a position as fireman or oiler can acquire the technical knowledge necessary to pass his examinations by correspondence if he is persevering enough.

**Automobile Mechanic.** The people of the United States have, in the last twenty-five years, become tre-



*Courtesy, Packard Motor Car Co., Philadelphia*

#### A MODERN AUTOMOBILE REPAIR SHOP

Repairs are made on a fixed charge basis and each operation is standardized and the cost known

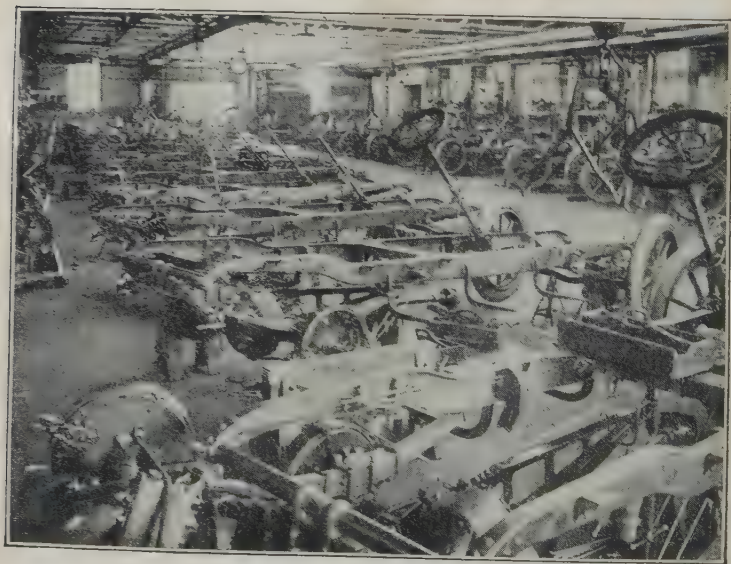
mendously interested in automobiles. Ninety per cent of all the automobiles in the world are in the United States. There are enough of these machines to take all the people in the country out for a ride at the same time. When we remember that the life of the average automobile is only four or five years, and since it must have considerable repair to last this long, we can easily see that quite a large number of persons are needed to keep all this complicated and delicate machinery in good running order. This makes work for a large

number of young men in the repair shops and garages. This work requires more than a mere machine shop training. The repairman is asked to do everything from washing and polishing up to tearing down the electric system and repairing it. The cooling system, the transmission, the wheels and tires, as well as the engine itself, all come under his care.

**Preparation of the Learner.**—In the first place, the learner must be interested in machinery. This makes nearly every American boy fitted to learn. Next, he must have a good memory. There are many different kinds of cars, each with its own problems and methods of treatment. Then the boy, as early as possible, should get a job in a repair shop or garage. Here he will wash and polish machines for a while. Then he will be given the chance to help tear down engines for the skilled mechanics to work upon. He will take off and replace tires, and after a while will help patch and vulcanize those that need repair. Step by step he will learn to work until, in a few years, he will be able to take charge of a shop of his own. There are several schools in which the trade can be learned more quickly. In some of the larger city high schools there are regular courses in automobile repair work. All this helps the boy to learn the job more quickly.

**The Advantages of the Skilled Trades.**—A man who is really skilled in any of these trades is usually the last to be laid off when the hard times come. Many employers keep together the staff of skilled men even at a loss during such periods, as it is hard to collect such a group at best. The workman also has the

pleasure and satisfaction of living in his own home with his family, in settled and permanent communities. Thousands of these workers buy their homes and become important and responsible men in the community. The skilled man has the chance of set-



*Photo. Keystone View Co., Inc.*

#### AN AUTOMOBILE ASSEMBLY ROOM

Here the frame, running gear, engine, etc., are put together

ting up for himself in his own shop. Hundreds of our factories today trace their history back to such shops. The wages are good, and the skilled tradesman can give his wife and children as good a place in the world as most professional people, and better than many. Quite a large number of factories give their employees the chance to buy stock or shares in the company. In



this way, and by saving up his extra income, the old age of the skilled worker can be made independent.

Many skilled workers who do not care to go into business for themselves find plenty of opportunity for advancement. Foremen are generally chosen from the most highly skilled workers. Inspectors such as cities employ to inspect plumbing and electric wiring must have learned their trades and worked at them for a number of years. There is always a demand for skilled workmen who can teach their trades in apprentice departments or trade schools.

**The Service of the Skilled Worker to the Community.**  
—The skilled worker is indispensable to almost all other work in the community. In fact, when the skilled workers stop working, almost everything else must stop. The farmer and the miner as well as the factory worker, depend to a very large degree upon him. He can pride himself upon the fact that without him men would be obliged to go back to a very primitive way of living. The skilled worker is respected by his neighbors, and certainly can respect himself.

## THINGS FOR PUPILS TO DO

Questions for discussion in class.

Arrange a debate on the question: "Resolved, that the machinist is better off than the farmer."

Show in what different ways the machinist helps the farmer to produce his goods and market them.

What do you think is the hardest part of a locomotive engineer's work? How would you like to drive the engine on a dark, stormy, winter night?

Problems to be studied outside of class.

Visit some machine shop. Make a list of the various



machines and tools used in the shop. Could an engine be built in this shop?

Ask some machinist why he took up this trade. Ask him whether he wishes he had learned some other trade. Find out why he likes or dislikes the trade of machinist.

If you are acquainted with some designer, ask him what was the hardest problem he ever had to solve.

If you think you would make a good designer, observe some task about the house or farm, and see whether you could design a machine to do the task.

Try to find out why cast iron shows the fine details of a pattern better than brass or gold when cast into a mold.

Ask some steam engineer what the "horse-power" of his engine is, and see whether you can understand how he figures it out.

Find out from some automobile mechanic what part of his work is easiest, and what jobs give him the most trouble. If you have a car at home, what part gives the most trouble? Could you design a remedy?

If you know a patternmaker, try to find out from him why he chose this work rather than cabinetmaking or regular carpentry.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

HUGH BENTON, WORKER.—*William Heyliger*. The adventures of a boy who entered the automobile industry.

CAREERS OF DANGER AND DARING.—*Cleveland Moffett*. Accounts, many based upon fact, of dangers in bridge building, locomotive engineering, etc.

### Other Books.

BOY SCOUTS OF AMERICA.—The chapters on blacksmithing.

STORIES OF USEFUL INVENTIONS.—*Samuel E. Forman*. Pages 38 to 53 give the story of the invention of the forge.

INDUSTRIAL WORK FOR BOYS.—Pages 99 and 105 tell about iron work and forging.

GREAT INVENTIONS.—*Elmer E. Burns*. Chapters I and II give the story of some of the earlier mechanical inventions.

AUTOMOBILE REPAIRING MADE EASY.—*Victor W. Page.*

VOCATIONS FOR BOYS.—*Weaver and Byler.* Chapter XVIII, the metal trades.

WOOD PATTERN MAKING.—*Howard T. Purfield.* Contains a great deal of information on the mechanical side of the work.

WOODWORK FOR SECONDARY SCHOOLS.—*Ira S. Griffith.* Chapter IX has information on patternmaking.

FOUR AMERICAN INVENTORS.—*Francis M. Perry.* The story of Robert Fulton and the steamboat.

HEROES OF EVERYDAY LIFE.—*Fanny E. Coe.* Pages 125 to 142, the story of a marine engineer.

STARTING IN LIFE.—*Nathaniel C. Fowler.* Pages 150 to 161, starting to learn the trade of locomotive engineer.

## CHAPTER XI

### THE BUILDING TRADES

**What Is Meant by the Building Trades.**—In any community so far advanced from the savage state that



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#### A SETTLER'S HOME

Such a house can be easily and quickly built by unskilled labor. When the division of labor has begun, one of the first distinct, separate trades is that of constructing houses. To build a house in which people are willing to live is not easy. If they were satisfied with merely a shelter from

the rains and storms of winter, almost anybody could construct the building. In fact, in pioneer times, almost anybody did. But, as we become more and more civilized, we demand more and more improvements in our homes, schoolhouses, places of business, and public buildings. We demand comfort, space, beauty, permanence, and healthfulness. To give us all these things, a great variety of trades has come into being, all of which may be classed as skilled trades,



THE EVOLUTION OF THE HOUSE

Note the progress from the cave to the tent, the hut, and the simple house

since all require some time to learn, and all are well paid.

**The History of the Building Trades.**—Even when a man was in the savage state, he made some attempt to provide himself with shelter. Perhaps his first protection from the weather was found in caves or overhanging rocks, or, maybe, under a tree with thick leaves which would keep off the rain. The first builder was doubtless the man who rolled rocks before the entrance of his cave to keep out his enemies or the savage beasts. But when it was that man learned to construct tents, or to pile logs, or to fit stones together into a wall, or even to make bricks, nobody knows. In various parts of the world we can find traces of ancient buildings. We do not know who built them or when.

In northern Africa, on the now desolate plains of Central Asia, in some of our own southwestern states, these ancient ruins of forgotten races may be found. There are also many buildings standing of which we do know the history. These buildings, of different countries and different ages, have their own peculiarities of style. A very interesting part of the studies of the architect is to examine these different styles and to use the ideas he gets from them in the buildings he may be called upon to erect. But within the last hundred years, this century so rich in inventions, the inventor has also been busy with our homes. These inventions have made a whole group of skilled trades necessary for house building, and some of these trades we will now study.

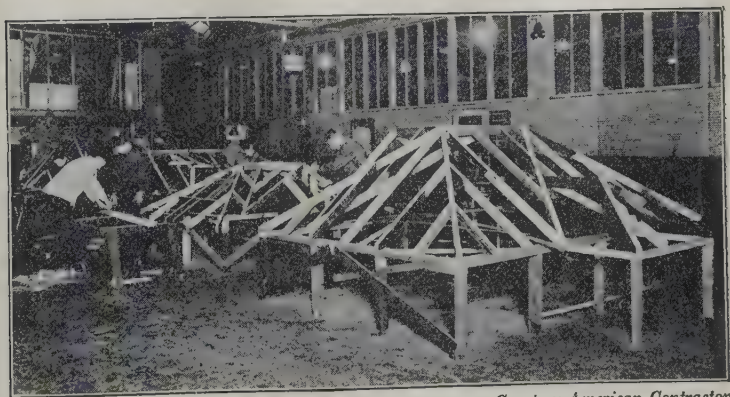
**The Carpenter.**—Ever since man learned how to use wood, there have been carpenters. The normal boy of today likes to use the saw, the plane, or the chisel to make things out of wood. Boy Scouts help to build Scout camps; other boys like to make chairs and tables for their own rooms at home. A boy who finds this kind of work pleasant may well undertake to make the trade of carpenter his life work. Compared with other trades, that of carpenter is very desirable. Dean Schneider, of the School of Engineering, University of Cincinnati, has made a list of the features of a desirable trade, and this trade stands high in the number of these desirable features.

1. The work should be largely in the open air. In the work of the carpenter, there is no smoke, heat, dust, or darkness. The trade is healthful.



2. The work should offer a great variety of physical exercise. The carpenter does not stand at a machine and overwork a few muscles. The whole body gets a proper amount of exertion.

3. The work should give the worker a chance to use his mind. This is true of the carpenter trade. He cannot stand still mentally. Rarely are two jobs



*Courtesy American Contractor*

A CARPENTRY TRADE SCHOOL  
Teaching apprentices to build houses

exactly alike, and new problems are constantly coming up for solution.

4. The work should develop mental quickness. The carpenter must have his wits about him, and make right decisions quickly.

5. The worker must be able to see the job as a whole. This is true of the carpenter. He must take into account the other workers on the job. There is no use in laying a floor that must at once be taken up by the electrician or the plumber.

6. The work should not be monotonous. One day the carpenter may be working on a new house, and the next, repairing or remodeling an old one. He may work at house building and follow this with work in concrete forms. There is constant change in the work of the all-around carpenter.

7. The work itself, when well done, should help to develop in the worker those qualities of manhood that are necessary to a good man and a good citizen. The carpenter's work must be honest, and the workman must feel this sense of responsibility.

**Nature of the Work.**—Since modern planing mills have been built and equipped with power-driven machinery, the work of the carpenter is somewhat easier and simpler than formerly. In the old days, all the window sash, window casings, doors, and door frames had to be worked out by hand. Now these are bought at the mill ready to set. But the carpenter still needs a great deal of skill in framing, weather-boarding, roofing, and inside work. Carpenters are needed, also, on structures, which, when finished, show little or no woodwork. A concrete bridge may not have a chip of wood in it, yet a large part of the expense of the building was wages paid to carpenters. The same is true of a skyscraper. The carpenters are needed on such structures to erect and take down the necessary scaffolding and to make the forms into which the concrete is poured.

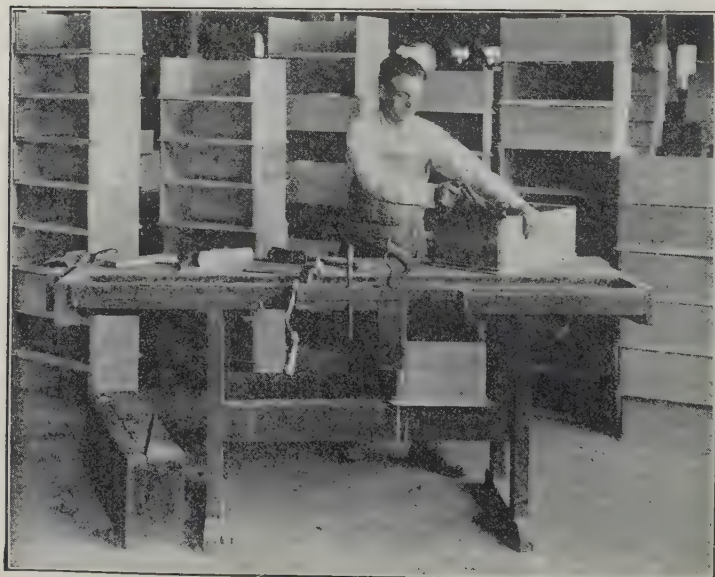
**Divisions of the Trade.**—The employees in a planing mill, although they turn out work that was formerly done by carpenters, are listed as manufacturers. And

the men who make furniture or patterns for molders are now classified separately. Among the real carpenters we find the journeyman carpenter who works for wages. No great investment is needed. His box of tools costs about two hundred dollars. Considering the amount of training necessary, wages are high. Above the journeyman is the contracting carpenter. He studies the job carefully; then makes a contract for a fixed sum for the entire task. Whether he makes more than the journeyman depends upon several conditions. Can he get his materials promptly? Can he find enough reliable journeymen? Has he figured his contract intelligently? Is the weather favorable? Is his employer dependable in making payments? A fairly intelligent contracting carpenter can usually save up a considerable sum each year in addition to what he would make as a journeyman.

**The Preparation of the Learner.**—Many successful carpenters in the past have had little schooling. Nevertheless, the learner should have a good high school training, including various branches of mathematics, physics, and mechanical drawing. If he cannot study these in high school, he can acquire the necessary schooling by correspondence. He can prepare for the work in a good trade school more quickly than in any other way. If such a training is out of his reach, he should serve as an apprentice to some good carpenter for three years. Apprentices are usually paid while learning. The keen, alert apprentice will spend much of his spare time reading books and magazines that have to do with his trade. If he cannot serve an apprenticeship, he should

wait until he can do the work of a helper and get as much training as he can by going to school or by reading.

**Cabinetmaking.**—The boy who really loves to handle good tools, and who has the patience to do fine and



*Courtesy Unit Construction Co., Philadelphia*

#### THE CABINETMAKER

Great skill with carpenter's tools is required. The man in this picture is making radio cabinets

accurate work, can always branch off to patternmaking or cabinetmaking. In our day the great furniture factories, fully equipped with machinery, can turn out furniture by the carload. But there is always work for the really skilled cabinetmaker. Some of his work will be repair work, and some of it will be creative,

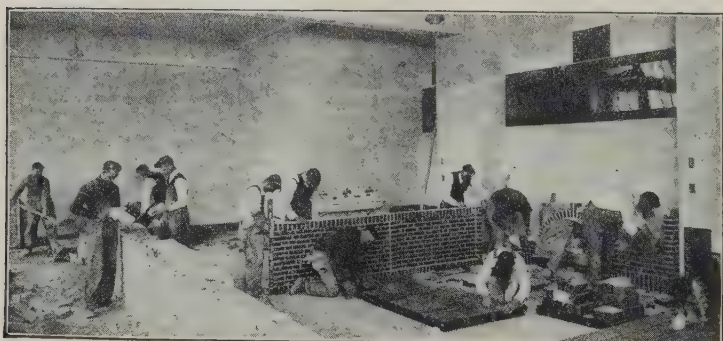
artistic work such as the factories cannot hope to equal. Some of the names of the old-time cabinetmakers are household words because of their beautiful designs. For example, the names of Sheraton and Chippendale are much better known than the names of many of the dukes or generals of their day.

**Disadvantages of the Carpenter's Trade.**—In some parts of the country, especially in the South, the carpenter can work nearly the whole year round. In other parts of the country the winter months are often periods of idleness. The work is sometimes very heavy, as when framing a house or barn. In periods of depression, the building industry is likely to slow up and throw the men out of work. This is, of course, true of almost everybody except the farmer. The demand for carpenters is very great in this country, the census of 1920 listing about 890,000 men of this trade.

**Masons.**—These are the men who work with stone, brick, or concrete, although the two latter trades are sometimes listed separately. In the United States there are 131,000 men listed as masons. Their number is not so great as the carpenters, because we, in the United States, are building more frame houses than houses of brick or stone. Even in a frame house, however, the mason is needed to lay the foundations, build the chimneys, etc. With the rapidly rising price of lumber, people are more and more considering stone or brick as a building material. Some cities require all buildings, or at least all buildings in the business section, to be built of fireproof materials. These facts all help to make more work for the mason.



**Comparison with Other Trades.**—If we compare this trade with the requirements of a desirable trade set up by Dean Schneider, we see that the mason, like the carpenter, has almost all the advantages listed by him. There is perhaps a little more monotony about it, but on the other hand, the body is exercised properly, and the mind keeps on growing and is trained in quickness and alertness. The work of the mason is



*Courtesy "American Contractor"*

#### A BRICKLAYER'S TRADE SCHOOL

Learning to build walls and lay brick paving

the most nearly permanent thing man creates. There are houses and bridges now in use, the age of which is counted by the thousands of years. There is no reason, barring the chances of war or earthquake, why many of the structures now being erected should not be in use thousands of years from now. Then, the mason develops in his daily work those same qualities of honesty and responsibility which make him a better man and a more useful citizen.

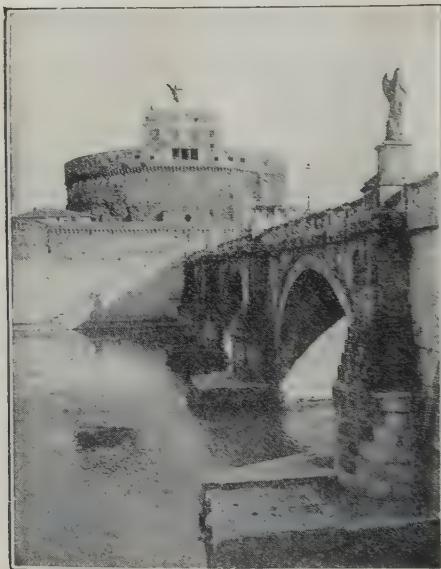
**The Work of the Mason.**—The mason deals with

several materials. First, there is stone. He must learn about the different kinds—marble, sandstone, granite, serpentine—and must learn what weights they can bear without crushing. He should be familiar with the different kinds of brick, from the hard facing brick to the soft interior brick. Bricks are often laid in ornamental patterns. Another and increasingly important material is concrete. How to mix it, how to care for it until it hardens—these questions must often be answered by the mason. He must also be familiar with the various kinds of mortar used to bind the stone or brick in the wall. In some of the earlier brick work we learn that asphalt was used. In our day the mortar is made with lime and sand, or with cement and sand. In any case, the mason must know how to mix and use the proper mortar.

**The Learner.**—The boy who selects this trade should have at least his high school training, with mathematics, physics, and drawing. The usual way in which the trade is learned is by the apprentice system. The boy becomes helper or apprentice to some expert workman. He is taught to mix the mortar. He then carries the mortar and the brick or stone to his master and observes how the expert solves the various problems—how he keeps the wall plumb, how he manages the work at corners, around window casings and door frames, how he sets his lines and keeps them straight. After a while he is allowed to set walls himself and in about three years he is able to undertake the work of a journeyman. As a journeyman, he now draws full wages. If he has the right kind of energy and perseverance, he may,

before long, begin to take small contracts. If successful, he may before long be an important contractor.

**Advantages of This Trade.**—The working season of the mason is likely to be shorter than that of the



AN ANCIENT MASONRY BRIDGE

More than two thousand years ago the masons of ancient Rome built this bridge, which still stands as a monument to their skill

carpenter, especially in the North, where his mortar or concrete would be ruined by freezing. On the other hand, the competition is less, and the wages somewhat higher than the carpenter's. He has the chance of getting connected with much larger contracts than the carpenter. Large public buildings, office buildings, expensive private residences, bridges, and dams are al-

most always built of masonry rather than of timber. For this reason the contracting mason has better opportunities to acquire wealth than the carpenter has.

**The Structural Ironworker.**—This is a trade that has grown very rapidly in recent years. One hundred years ago nobody ever heard of a structural ironworker.

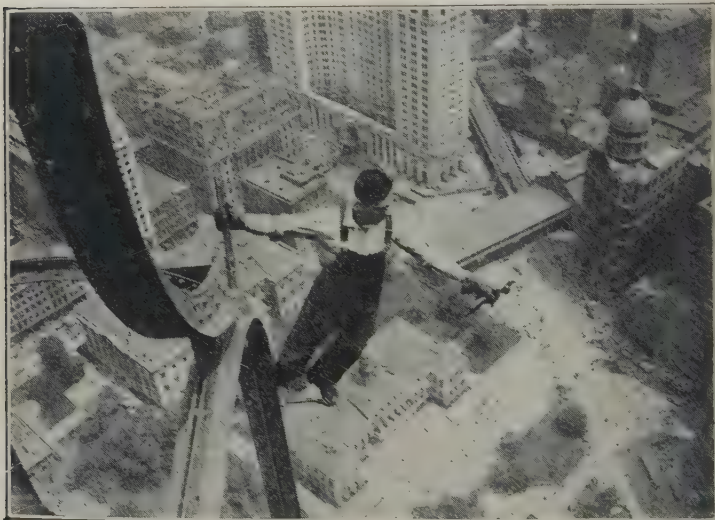
since there were neither bridges nor ships built of iron at that time, and nobody had as yet dreamed of buildings with an iron framework. Beginning about the time of the War between the States iron ships were first launched. Shortly afterwards iron bridges became common, and about thirty years ago buildings with iron or steel frames began to rise in our large cities. As usual, when the need arose, a group of skilled men, able to do this work, was rapidly developed. The demand for this type of work is constantly increasing. As our cities grow, the value of the land in business sections becomes so high that an ordinary building cannot bring in enough revenue to pay for the lot upon which it is built. But if a building from ten to forty stories high is erected, the rents will enable the builder to pay for the lot, the building, and its operation, and leave a good profit besides. These tall buildings require steel frames, and this makes work for the structural ironworker.

**Ships and Bridges.**—Very few wooden ships are built any more. In the shipyards, therefore, the carpenter has given way to the structural ironworker. But bridges made of iron or steel are in many cases being replaced by concrete structures, in this way lessening the number of ironworkers needed. Even in the case of bridges, however, if the stream to be bridged is a navigable one, the bridge must either be built so high that ships can pass under, or it must be built with a movable span so that the channel can be opened. These types must both be built of steel.

**The Work Itself.**—The work is done by two groups



of workmen—erectors and riveters. The erector is the man who sets the various pieces of steel in their proper places and fastens them for the time with a few bolts. The riveters are the men who follow the erectors and place the permanent rivets in place. A riveting gang



*Pacific & Atlantic Photos, Inc.*

#### THE COWBOY OF THE SKIES

Showing the risks that attend the work of the structural iron man usually consists of four men—the forge man or heater boy who heats the rivets, the placer who catches them and places them in the proper holes, the holder who holds the head of the rivet tightly against the frame, and the hammer-man who, with the powerful air-hammer, fastens the rivet in place. The work is carried on at high speed. You can easily see why this is so. The building or ship can bring no income until it is finished.



Meanwhile the high rent for the ground must be paid as well as the interest on the money being spent on the structure. This may mean hundreds, even thousands, of dollars a day.

**The Learner.**—The boy or man who plans to become a structural ironworker needs some special qualities, as the work is dangerous. He must not be of a nervous type nor of a dreamy or forgetful type. He must be sober and alert. A man who has had some experience with a circus or as a sailor finds this work very easy to learn.

**Advantages and Disadvantages.**—The work is very irregular. Some of the larger cities have enough of this work going on all the time so that it is worth while for a man to establish his home there. But many of the structural ironworkers are obliged to travel from town to town for their work. It cannot be made a life work, as old men, or even middle-aged men, cannot keep up the deadly speed. On the other hand, the wages are high, and the work has all the thrills of the keen competition and danger which so many young men like. A man who can make good at this trade may be sure that he is a man. He may also pride himself on the fact that he is one of the essential workers in our modern American life.

**Plasterers.**—According to the United States Census of 1920 there are only about 46,000 plasterers in the country. Yet it is hard to see how a building can be made ready for use without them. It is the plasterer who finishes up all the inside walls and ceilings. Since so many buildings are now being erected with a stucco finish, he also has a good deal of outside work.

**The Work of the Plasterer.**—Plastering is done in this manner: first, a foundation for the plaster must be placed on the walls. This foundation is usually made of narrow, thin strips of wood called lathe, nailed to the wall with narrow cracks between them. There is also a kind of steel mesh which is now being used a great deal, especially where fireproof work is needed. After the lathing is done, the worker spreads on the first or rough coat, smoothing it with his trowel. The thin, white finishing coat is applied later. Outside work is usually left rough.

**The Learner.**—The plasterer needs, for his trade, less school training than the other skilled trades. Nevertheless, a good high school education will be found very helpful. There is needed an ability to compute readily and to estimate; hence mathematics should not be neglected. The trade is learned by serving as apprentice, although a good beginning is sometimes made in a trade school or in one for plasterers only. The learner finds out how to mix the different plasters for the different finishes. He also learns something about molding and designing, since some of the inside work is ornamental. He then learns how to cover flat surfaces and, as he advances, to cover curved surfaces, and finish corners and arches. The work is rather more steady than that in some of the other building trades, since the inside work can be carried on throughout the year when outside work is impossible.

**Plumbers.**—Plumbing is one of the new trades that has risen in the last fifty years. In the modern house

we like to have the hot and cold water convenient in the bathroom, kitchen, and laundry. It has been quite a long time—sixty years at least—since city councils and state legislatures passed laws forbidding bathing in the winter. We need plumbers to place the pipes



*Courtesy—American Guild of Plumbers*

**A PLUMBING TRADE SCHOOL**  
Learning to make joints in lead pipe

for water, gas, and sewage, and to set the sinks, bathtubs, and laundry tubs, and to connect all these with the city gas, water, and sewer systems. Even on the modern farm we find a water system with a tank, and with pipes running to the house, the barn, and the dairy.

**The Work of the Plumber.**—The work itself is very interesting. There are always new problems to be

worked out. The plumber should have some talent in planning, even in inventing. He must be able to place the pipes so that the sinks, etc., are most convenient. He must also be able to place the drains and sewer pipes in such a way that the health of the householder is not in danger. The work is not heavy, but some of it may be very dirty. The plumber must not be afraid to soil his hands and his clothes.

**The Learner.**—There are many trade schools in which this trade can be learned. He must then, according to the rules of the trade, serve for some years as apprentice or helper. He needs a better school training than is required by some of the other trades. He should be thoroughly schooled in mathematics, physics, and mechanical drawing. Besides these, he should have studied physiology and hygiene, since the health of the community depends upon the plumber almost as much as upon the doctor. If he enjoys studying, he can advance to such positions as plumbing inspector, consulting expert, or sanitary engineer. In some foreign countries city managers are selected from the ranks of the sanitary engineers.

**Advantages.**—In our country the trade of plumber offers work almost continuously. During the building season he is constantly employed in equipping new houses with plumbing. Then there is a constant demand for repair work. In fact, sometimes the busiest season for the plumber is in the winter when careless householders have permitted the water pipes to freeze. The master plumber need not depend on the wages he earns as a workman. He usually keeps on hand a line



of plumbing fixtures for sale—sinks, bathtubs, etc. The sale of these fixtures adds largely to his income. He also has the opportunity of entering the contracting field, taking “subcontracts” from builders for the plumbing work.

**The Electrician.**—Almost every boy is interested in electricity. In the last forty years electricity has



*Courtesy Drexel Institute, Philadelphia*

**A TRADE SCHOOL CLASS IN ELECTRICAL WORK**  
Learning to install and repair dynamos and motors

entered our homes in many ways. First, Mr. Edison perfected a convenient electric light. Other inventors have devised vacuum cleaners, washing machines, ironers, coffee-percolators, even cook-stoves and refrigerators, all operated by electric current. Many household sewing machines and other devices also are now being run by electric motors.

**The Work of the Electrician.**—It is the electrician who places the wires all through the house with proper



electricians against fire dangers. He also places the outlets for lights, devices, and switches where they will be most convenient. He installs doorbells and buzzers. He sees that the proper fuses are installed, so that a strike of lightning will not figure the electric appliances or set the house on fire. He should be able to act as adviser to the builder, suggesting the most convenient forms of fixtures and switches, and advising where they should be placed. His work is not confined to the city. Many farmers are buying small plants consisting of gasoline engine, generator, and batteries, to light up the house and barn. If the farm is conveniently placed with reference to some power line, he may even use electric power for pumping water, grinding feed, and threshing. All this makes additional work for the electrician.

**The Learner.**—The boy who finds electricity interesting need never stop studying. Really, with all our advance in science we know very little about this wonderful, mysterious force. The boy should study all that his high school offers in the line of mathematics, physics, and mechanical drawing. He should work under a practical electrician so as to learn the problems of the trade at first hand. While serving as apprentice, he will have opportunity to study some correspondence courses if the city night schools do not offer enough work in this line to satisfy him. Above all, he should try to keep up with the new inventions and discoveries in his field.

**Advantages.**—The electrician receives the good pay of the skilled mechanic. Like the plumber, he can keep

a shop and supply store where his customers can see the latest designs in electric equipment and where, by selling these things, he can add to his income. There is always a great deal of repairing to do, always new houses being built, and often old houses, being brought up-to-date, to wire and equip. He can feel that his work is helping to make life easier and more comfortable for the overworked housewife. The electrical equipment saves many weary steps for her.

**The Painter and Decorator.**—This is a trade in which, in times past, there have been too many people who were uneducated, who had no taste, and who made houses look worse, inside and out, than they were before they were “decorated.” The decorator should be an expert, able to advise his customers as to what is really beautiful and becoming. Under his hands the house should become an object that really pleases the educated and refined taste.

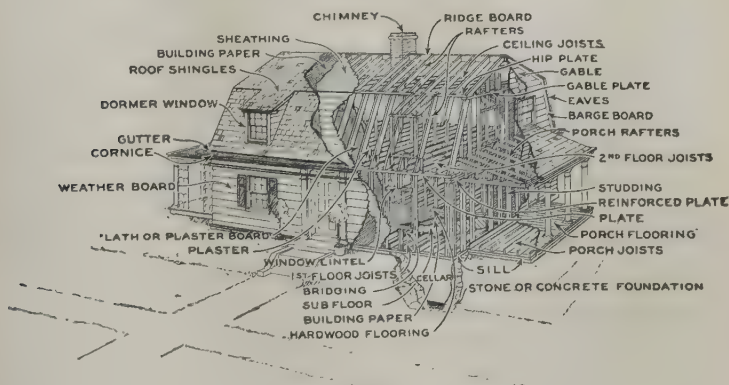
**The Work of the Decorator.**—The outside of the house, if it is a frame house, must be painted from time to time. Even a brick or stone house must have the woodwork protected from the weather. Besides adding greatly to the appearance of the house, paint will cause it to last much longer. In fact, in some of our older states there are frame houses several hundred years old, which show no signs of falling down yet. For example, Washington’s old home at Mount Vernon is a frame structure. The greatest opportunity for the decorator, however, is inside the house. The walls and ceilings are either papered or tinted with paint. The interior woodwork may be stained or painted. These are all

tasks for the decorator. There are wonderful opportunities in this field. If the decorator has real talent and training, he may be asked to suggest curtains, rugs, furniture, and pictures. A great many women have entered this field in our large cities, and some of them are receiving very large sums for their work. Moreover, they are doing a work that calls forth the interest and delight that come with the solution of new and changing problems.

**The Training of the Learner.**—The boy who plans to become a decorator needs all the training he can obtain if he is to amount to anything. Mathematics and physics are, of course, needed. He should have some knowledge of chemistry, since paints need expert handling to get the best results. If a girl wishes to make good at this trade, she must have a thorough training in history and art. All decorators should have a thorough understanding of the various color combinations. A good course in a school of applied art is very helpful.

**Rewards and Difficulties.**—The person who has mastered the simple trades of painting and paperhanging is fairly sure of steady work for at least nine or ten months each year. Outside painting depends largely upon the weather, since paint must have dry weather to harden. Inside work can be done at any time of the year, wet or dry, cold or warm. There is some danger to health, since the base for many paints is white lead, which is a poison when absorbed through the skin. In varnishing, also, the fumes of wood alcohol tend to injure the eyes. Both these dangers, however, can be

guarded against by proper caution and skill. The expert interior decorator meets none of these disadvantages. She can command almost any price for her services. Besides her usual wages, she is entitled to commissions on her purchases of rugs, furniture, etc. Both the ordinary tradesman and the expert may have the pride that comes to the person who helps to make the world more beautiful.



A FRAME HOUSE

Most of the work is done by the carpenter

**The Work of the Builder.**—In the United States we have, since the war, been spending nearly four billion dollars a year on new work alone. Much of this vast sum goes into the pockets of the men of the building trades in the form of wages. The work is useful and essential, since it satisfies one of the three great needs of human beings, which are food, clothing, and shelter. The work is permanent, since the buildings are designed to stand for many years—perhaps for many lifetimes.

The work calls for honest and responsible men, since the lives and health of the people depend largely upon the honest, intelligent work of the builder. Any one of the building trades is worthy of the serious consideration of the boy who wishes to make a good living and at the same time to benefit his fellow men.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

What are the chances for a boy entering the carpenter trade in your community? Are the carpenters kept busy?

About how many days a year do the carpenters and masons of your town work? What is the rate per hour for a journeyman in either trade?

Are the plumbers in your town employed steadily? Do they have many frozen pipes to repair in winter?

What part of the work of the carpenter do you think requires the highest degree of skill?

How frequently must houses be painted in your town? Can you compare this with the number of times a farmer must paint his buildings? Why must the city dweller paint more frequently than the farmer?

Compare the work of a builder in Canada with the same work in one of the Gulf States. What are some of the worries of the Canadian builder that the Southern builder does not have?

Problems to be studied outside of class.

Ask some carpenter why he entered this trade. How does he like it? Does he wish he had learned something else?

Estimate the number of bricks in some building with which you are familiar. If a bricklayer can lay 600 bricks a day, how long would it take to erect a similar building?

Figure out the number of square yards of plaster in some building with which you are familiar.

Examine some great work of concrete in your neighborhood. Can you find out what mixture was used? Try to figure out how many yards of concrete in the structure.



Get into some unfinished house and see how the electrician safeguards against fire.

If you know any mason's helper or carpenter's apprentice, ask him what different things he is expected to do.

Find out the laws of your state concerning the licensing of plumbers; the laws of your town about plumbing inspection.

Do the electricians of your state have to obtain a license? Ought such a requirement to be enforced?

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

WITH THE MEN WHO DO THINGS.—*A. R. Bond*. Two boys spend a vacation in New York seeing skyscrapers built.

BOB HAZARD, DAM BUILDER.—*Carl Brandt*. A story of a boy who became interested in the Government Reclamation.

### Other Books.

CONCRETE ON FARM AND IN SHOP.—*Henry C. Campbell*. Tells some of the easier work with this marvelous material.

CARPENTRY.—*Ira S. Griffith*.

A RURAL ARITHMETIC.—*Madden and Turner*. Chapter XVII tells about some of the problems of building on the farm.

VOCATIONS FOR BOYS.—*Weaver and Byler*. Chapter XX treats of the building trades.

POPULAR HANDBOOK FOR CEMENT AND CONCRETE USERS.—*Lewis and Chandler*. Chapter VIII tells about concrete blocks; chapter XX, about concrete in building construction.

VOCATIONAL MATHEMATICS.—*W. H. Dooley*. Part II deals with building and the trade of carpentry.

A VOCATIONAL READER.—*C. P. Pressey*. Pages 110 to 116 tell of a carpenter who founded a university.

INDUSTRIAL WORK FOR BOYS.—*A. E. Pickard*. Pages 94 to 99, home projects in concrete.

VOCATIONAL ARITHMETIC.—*Harry D. Vincent*. Page 91, concrete and brick work.

WHAT CAN A YOUNG MAN DO?—*Frank West Rollins*. Chapter XXXI, electricity.

CAREERS FOR THE COMING MAN.—*Saalfeld*. Pages 89 to 98, electricity.

DISEASES AND VOCATIONAL HYGIENE.—*Kober and Hanson*. Pages 115 to 117, also 515 to 520, about lead poisoning of painters.

PLANNING AND FURNISHING THE HOME.—*Mary J. Quinn*. Chapter XVI, the painting of the interior.

VOCATIONAL MATHEMATICS.—*W. H. Dooley*. Part VI. Plumbing and Hydraulics.

PRACTICAL HOME MAKING.—*Mabel H. Kittredge*. Chapter XIX, plumbing.

TRADE FOUNDATIONS.—*Guy M. Jones Co.* Pages 95 to 97, Structural Ironworkers.

THE BUILDING TRADES.—*Frank L. Shaw*. Pages 23 and 24, Structural Ironworkers.

## CHAPTER XII

### TRANSPORTATION

**What Is Transportation?**—Since the tasks of labor have been so divided that men must exchange products in order to supply their needs, it follows that these products must be moved from the place where they



*Courtesy Commercial Museum, Philadelphia*

#### STEPS IN THE DEVELOPMENT OF TRANSPORTATION

The human burden bearer, the camel, the rude sled, the two-wheeled cart, and the Conestoga wagon

have been produced to the place where they are needed. We have seen that the farmer and his family no longer make their own clothes or tools. Somebody makes them, and they must be brought to the farmer. Neither the farmer nor the miner could use all he obtains from the farm or the mine. These products must be taken to the factories and later to the cities where they are

needed. Not only goods are taken from place to place, but people also. A man hears that a good position may be obtained in a city hundreds of miles away. Or he may hear of some wonderful scenery, which he wishes to see for himself. Or his children may learn of some school at a distance which they desire to attend. The process of carrying goods to places where they will be more useful, or people to places where they want to go, is called transportation. The process may be carried on over land or over water, and, in recent years, through the air.

**The History of Land Transportation.**—The story of the development of transportation really involves two stories, transportation by land and by water. The highway over which people and goods are carried changes and improves from century to century. The same is true of the carriage or vehicle that moves over the highway. The steps of the growth and change have been as follows:

<i>Highway</i>	<i>Vehicle</i>
The Footpath	Human Porter
Trail	Pack-animals
Dirt Road	Carts and Wagons
Turnpike	Steam Locomotive
Paved Highways	Electric Cars
Railroads	Automobile

Man's earliest land highway was the footpath along which he tramped to war or to the hunt. But in the dim past he learned to use the horse and the camel as beasts of burden. In some parts of the world a great deal of commerce is still carried on by means of these

beasts. After somebody invented wheels, there came the cart and the wagon. When it was found that these would run more easily on hard roads, private companies began to build turnpikes and charge toll for their use. In America, almost all these turnpikes have since been bought up by the states or counties in which they are located. The coming of the automobile, about the beginning of this century, has been a great help to highway development. But much of the land transport is now carried on by railways with steam-drawn trains or electric cars on them. Perhaps the future will see air-ships used very extensively in transportation.

**The History of Water Transportation.**—Here, too, we have the separate stories of the highway and of the vehicle. The development was somewhat as follows:

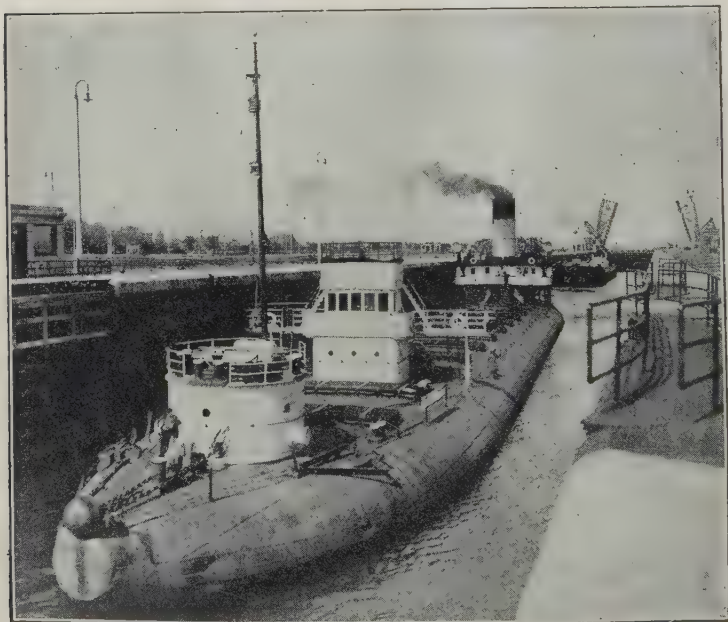
<i>Highway</i>	<i>Vehicle</i>
Streams and Rivers	Rafts
Lakes	Boats driven by Oars
Oceans	Boats driven by Sails
Canals	Tow-boats
	Boats driven by steam or oil

It is interesting to note that all these methods are still in use in various parts of the world. Rafts are made from logs and floated down stream to the saw-mills. Small boats are still driven by oars although the great galleys of Greece, Rome, and Phœnicia are no more. There are a few sailing vessels yet engaged in commerce. Most of the water-borne commerce, of course, is now carried in steam-driven vessels. The coming of the railroad caused hundreds of miles of canals to be abandoned in the United States. The people of Europe have been wiser. They retain their



canals and use them for heavy, slow freight. We have built canals in recent years mainly to shorten distances that ships would have to travel.

**Land Transportation as an Occupation.**—The people



**A WHALEBACK STEAMER**

Great cargoes of ore and grain are carried on the Great Lakes by ships of this type

who are engaged in transportation may be divided into several groups, so that really there is a great variety of work to choose from. This is useful and important work, and anybody can feel that he has chosen well when he takes it up. The opportunities for advancement are many. A boy can look forward to a field of

labor that will tax his utmost powers, the rewards of which will not only enable him to live, but in many cases, to become rich. If he has not the ability to undertake these higher and more responsible tasks, there are many other positions in which he can find his level.

**The Workers on the Highway.**—The land highway, if transportation is to be easy and economical, must be carefully built. The best knowledge that science and experience have acquired must be available. If it is a paved road, it must be surveyed, graded, paved, the streams bridged, and the road maintained in good condition. If it is a railroad, the same tasks except paving must be performed. Instead of paving, the crossties and rails must be laid, and the signals and switches must be properly placed. To do all these things three types of workers are needed—the professional man, the skilled tradesman, and the unskilled workers.

**The Civil Engineer.**—The general route of the highway having been determined, the engineers begin work. They must survey the best route between the two terminal points. They tell what cutting, grading, and filling are to be done, how many cubic yards it will amount to, and how far it must be hauled. They find out whether the cuttings will have to go through rock, or whether it will merely require digging in the earth. They determine what bridges are needed, and what type of bridge is best for each location. After the contracts have been awarded, they supervise the contractors, seeing that everything is properly done.

To obtain a position on an engineer's staff, a young man needs a thorough training in engineering at some

first-class university. It will be very helpful if he can act as rodman during his vacations. By so doing he can find out whether he likes the work or not. The course in the university involves higher mathematics and science, besides geology and drafting. The opportunities are exactly what the young man's ability and energy make them. If an engineer gets a great reputation for the work he has done, his services will be in



*Courtesy Drexel Institute, Philadelphia*

#### A CLASS IN CIVIL ENGINEERING

Teaching students surveying by field work in running lines and setting levels

great demand at very high prices. Almost every American boy has heard of General Goethals and the Panama Canal, Captain Eads and the Mississippi jetties, and Mr. Roebling with his suspension bridges.

**The Skilled Trades.**—Many men who have prepared themselves to enter the building trades find plenty of work at good wages in building highways or railroads. The carpenter, the mason or the concrete worker, and the structural ironworker are all needed at this work.

Bridges are needed, and snowsheds, signal towers, and railway stations must all be constructed if the road is to amount to anything. Men who are familiar with the problems of mining are called upon to drive the tunnels. The wells, water tanks, and coal chutes must all be built by these skilled tradesmen. We have already studied about these trades.

**The Unskilled Laborers.**—The number of these needed on highway construction and maintenance is very large. They are needed for the actual work of digging, teaming, repair

work, replacing ties and rails, filling in washouts, and so on. Even here the bright boy has the chance to rise to the position of section foreman. Some of our railway executives have begun their work in the ranks of the unskilled workers. The boy who is planning to take up engineering work ought to spend one or two summers working with a section gang.

**The Care of the Equipment.**—This is an important part of the work of railroading. Engines and cars are very complicated pieces of machinery. There are a thousand places about the engine where something may



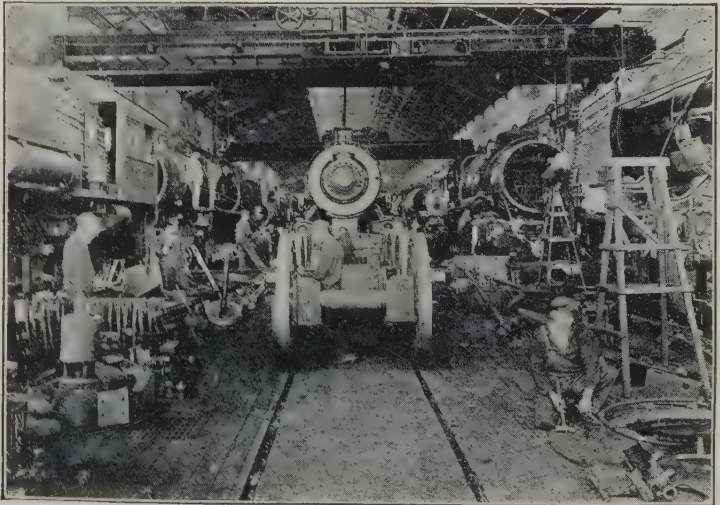
*Courtesy Penna. R. R. System*

**A TRACK GANG AT WORK**

Keeping the track safe is an endless job  
on a big railroad



go wrong. The boiler, cylinder, pistons, driving rods, brakes, wheels, air compressor—any one of these can get out of shape and interfere with the proper working of the engine. From time to time the engine must be taken to the roundhouse or repair shop and overhauled. If the cars are drawn by the steam locomotive, they



*Courtesy Penna. R. R. System*

#### REPAIRING LOCOMOTIVES

These huge machines are subject to tremendous wear and tear and all railroads maintain great shops to care for their equipment

will need to be examined for wear and defects in the wheels, airbrakes, lubrication, couplers, and frames. If they have electric motors, the motor and controller must be kept in good shape. We have already considered some of the trades which are practiced in a repair shop, such as carpenter, electrician, and machinist. In one of the railroad shops a clever man who is



skilled in any one of these trades may work up to the responsible position of master mechanic. It is the duty of these men to examine the cars or engines brought into their shops, and to direct the mechanics in the work of repairing. A large number of unskilled men are also needed in these shops to help tear down and put together the machines.

### The Men Who Handle the Trains.

—In the case of the steam roads some of the types of men needed are: yard men, engineers, firemen, conductors, brakemen or trainmen, porters, and telegraphers. These are the men responsible for getting the trains from one place to



*Courtesy Reading Company*

#### THE ENGINEER

On his skill and vigilance depend the safety of the passengers

another. They are aided by the signal men, who keep the tracks clear and the switches set. The dispatchers are responsible for the running time of the trains, keeping constantly in touch with them on the road.

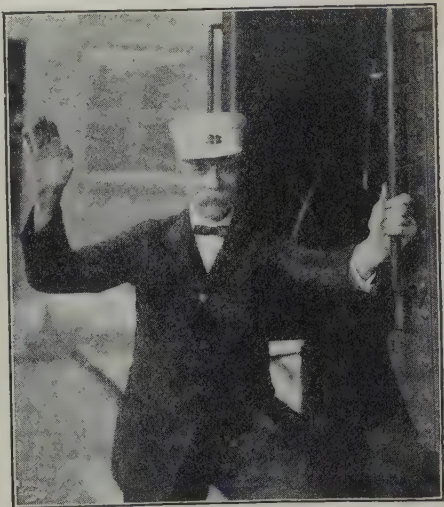
**The Engineer.**—We have already studied the trade of the engineer who controls the stationary engines in a

factory. But the trade of locomotive engineer is much different. Day or night, through sunshine, storm, or fog, he sits in his swaying cab watching the track, switch lights, and block-signals. He controls the great mass of the train, over a thousand tons, as a boy controls a bicycle. At any moment an unguarded crossing, a defective rail, or a loose bolt may bring disaster. In case there is an accident, he may be injured or killed. Yet so careful and skilful is he that many of the great roads proudly advertise, "Not one passenger killed in accident in a year," or perhaps "in several years."

**The Learner.**—Only a boy who is strong physically is allowed to enter this trade. His eyesight must be good and above all he must not be color blind. A green signal means one thing and a red one something entirely different. He must have the power of giving close attention to his work for long periods of time. There can be no dreaming in the cab. The engineer starts as a fireman. This job tests him out. By the time he has learned to keep up steam pressure on a Mogul while it is dragging a freight train up a long grade, and at the same time read and check the signals from his side of the cab, he is ready to take the throttle. He is usually sent out for several years on freight runs. It is only men with long experience who are given the fast express runs.

**The Conductor.**—The conductor is the captain of the train. If it is a freight train, he is responsible for the complete records of the cars, their freight, and their destination. He supervises cutting out cars at the proper stations and picking up those ready to be taken

away. If there are cars of package freight, he sees that the proper packages are unloaded at the right stations. The passenger conductor collects the tickets and cash fares. The train orders are in his charge. Besides these routine tasks, he stands for the company in the minds of the travelers. He must have plenty of tact and patience to deal with the traveling public. One mistake on his part may prejudice a traveler against his railroad. People will put up with a lot of inconvenience in travel if the railroad employees are courteous. It is the conductor who is responsible for the way travelers are treated on his train.



*Courtesy Penna. R. R. System*

#### THE CONDUCTOR

He has many duties besides collecting tickets which the passenger does not realize

**The Learner.**—The boy who wishes to be a conductor should have a good education. He should be even-tempered and courteous. A good memory is essential. He should be a fair penman and good at figures. The “apprentice” work is done as a trainman or brakeman. In this way he learns thoroughly the details of the work, helping the conductor to collect fares and deal with the

passengers. The work of trainman was formerly very dangerous. To connect cars up into a train was done by brakemen standing between the cars and dropping in the coupling pins and links at the right instant. When the engineer whistled for "brakes" the brakeman was obliged to wind up the old-fashioned brakes by hand to stop the train. The invention of air-brakes and automatic couplings has decreased the danger very much.

**Advantages and Disadvantages of Railroad Work.**—Men who are engaged in the work of carrying passengers, coal, raw materials, and manufactured goods have the satisfaction of knowing that their work is absolutely necessary. To realize how important railroads are one needs only to think what would happen if trains were to stop running for a week. Most people would be thrown out of work and many would starve. We could not get along without railroad workers.

There are safety devices, such as block-signals and air-brakes, that make railroad work safer than it used to be. Even today there is enough danger in it to appeal to the boy who craves excitement. There is also the disadvantage of being away from home much of the time, but to offset this there is the pleasure of "being on the move."

Because transportation never stops, railroad workers have steady work. Freight crews are laid off sometimes but passenger crews are never idle. Wages are generally good. Conductors and engineers earn salaries that compare well with the average incomes of professional men.



**Yardmen.**—It is the yardmen who get the trains ready to go out on the road. A railroad yard near a big city is a bewildering thing to observe. A big freight train comes in. The cars must be uncoupled and switched to warehouses and factories, or must be placed on separate tracks to be made up into other trains. If there is a rush, the cars may be standing on the sidings for several days before they can be switched. But an idle car is earning no money for the road. So the yard is a very busy place. Yardmen must have all the qualities of the men who handle the trains on the road. They must be strong men, sober and alert. Indeed, this matter of physical fitness is so important that nobody can obtain a job either in the yard or on the road without passing a strict physical examination. Few roads employ any men on these tasks who are not at least twenty-one years old.

**Signalmen and Telegraphers.**—A modern railroad is such a complex organization that these men are absolutely necessary to keep the traffic in motion. The big roads all have signals a few thousand yards apart. These signals, operated by electricity or compressed air, indicate whether the track is clear in the block ahead. No engineer will run past one of them if it is set against him. Near the large cities and at junction points there are also signal towers with men constantly on duty. These men are responsible for the proper setting of the switches as the different trains come by.

Others are employed to keep the signals in perfect condition. This work is done by the signal maintainer,



who regularly inspects all signal apparatus under his charge. If small repairs are needed he makes them himself. Where new signals have to be installed the work is done by the signal repairman. Either of these occupations can be learned by young men who show mechanical ability. They are first employed as helpers,



*Courtesy Penna. R. R. System*

#### A SIGNAL TOWER

From towers placed at frequent intervals along the road the movement of trains is controlled

and later promoted to assistant signalmen. While working as assistant signalmen they are given a thorough training for the position of signal maintainers or signal repairmen.

The men in charge of signal towers are usually telegraph operators, although the telephone is rapidly

taking the place of the telegraph in the handling of trains. These block operators handle their trains under the direction of the train dispatcher, who is responsible for the movement of trains over several miles of track.

Many boys learn telegraph operating in railroad stations. Others are trained in schools conducted by the railroad companies. The telegraph operator who is experienced and who can stand the strain of the work

has an opportunity to become a train dispatcher. The train dispatcher holds an important position and is well paid for it.

**Passenger and Freight Service.**—A railroad makes its money by selling services to the community. When it is asked to transport goods or persons from one place



*Courtesy Penna. R. R. System*

#### THE INTERIOR OF A SIGNAL TOWER

The man at the left is operating the switches and signals while the men at the right keep track of the movement of trains by the electric signal board in front of them

to another, it charges for this service. Therefore an important part of the work of the railroad is to arrange for the convenience of shippers and travelers. It must have stations where freight is received and classified for shipment, also where the freight can be unloaded by the persons who are to receive it from the road. It must have places where tickets can be bought, and

where passengers can wait until the train they wish to take arrives. A large group of railway employees are in attendance at these places to see that the public is properly taken care of. Excursions to places of interest along the lines of the railway are advertised, and every



*Courtesy N. Y. C. R. R.*

#### THE TWENTIETH CENTURY LIMITED

One of the fastest trains in the world, running between New York and Chicago

effort is made to increase the amount of traffic for the road.

**The Passenger Service**—You are perhaps better acquainted with the local station agent than with any other employee of the road. He lives in the town and shares in the growth and prosperity of his community.

In most small towns he not only takes care of the ticket window, but acts as freight agent and telegraph operator. In larger towns these duties are shared by a staff of employees. In large cities the ticket office may be uptown in an office building, conducted like any store.

This work offers a good opportunity to the boy who wants to live at home while preparing for his occupation. He can usually get employment in a passenger station close to his home. Within a few years he should be promoted to a position where he is in charge of a small passenger station, or passenger and freight station combined. An agent who makes a good impression on the traffic department may be promoted to a better agency in some larger town, or may even be promoted to a district passenger agency. A man who has ability as a salesman can work up to a very good position in the course of years.

**The Freight Service.**—For every passenger transported on American railroads, there are about two tons of freight transported. For every dollar earned by the road carrying passengers, four dollars are earned by carrying freight. Yet the cost of carrying freight in the United States is something less than a cent a mile for each ton. From these facts the great importance of the freight service may be imagined. The man who can learn to be an expert in the different kinds of freight and the different rates is sure of a good position and later of promotion. If he cares to enter the manufacturing field, his knowledge will secure him a good position in the shipping department of any large plant. This is because the plant that ships much goods or buys

raw material must see that its goods are carried as economically as possible. The expert in freight rates must know how goods can be hauled by the shortest routes and how they can be handled so as to get the cheapest rates.

This work is usually handled by men who started in small positions and worked their way up. Some have been helped by correspondence courses in traffic man-



*Courtesy Penna. R. R. System*

#### A FREIGHT TRAIN

More than two billion tons of freight are carried each year by the railroads of the United States

agement. It should be mentioned, however, that these courses are of little or no value to the person who is not employed in freight offices or traffic departments of manufacturing plants.

**Mail and Express Service.**—The work of the Railway Mail Service is essential to the carrying on of business. The men who are in charge of the railway mail are employees of the United States Government and receive their appointments through the Civil Service. The express business does not offer such good opportunities since the Government has established



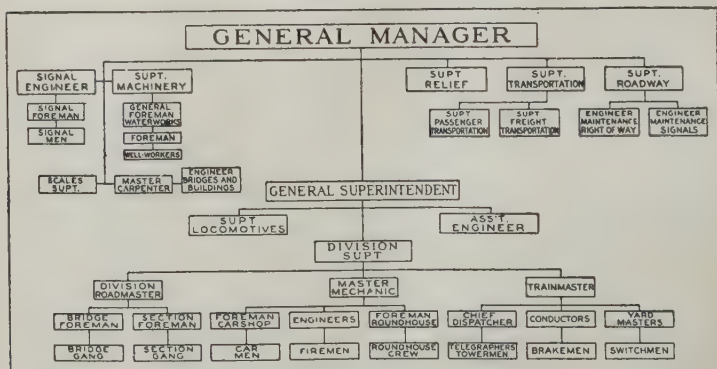
the parcel post. Most of the railways still handle express business, however, and the station agents in the smaller towns usually add something to the wages paid by the railroad by collecting commissions on the express business done in their offices.

**Financial Department.**—This department offers many chances to the young men who have fitted themselves for clerical work. This kind of work will be more fully discussed in a later chapter. An important part of the work of the railroad consists in keeping careful track of all money taken in and paid out. This is the chief task of the Auditing Department. By means of the tickets taken in by the conductors and the waybills issued by the freight agents, the auditor is able to check up on money received. When payments for materials or for wages are to be made, the auditor signs the vouchers, and is in this way able to keep a careful record of money paid out. A large number of clerks, bookkeepers, statisticians, and other trained men is needed for this work. From time to time this department publishes, for the benefit of the stockholders and of the public, statements of the financial condition of the road.

**Minor Departments.**—In addition to these necessary departments, without which the work of the road would fall into utter confusion, there are a number of other things to be done to make things run smoothly. Most of the positions in these minor departments require special training and skill. Each road has, for instance, a legal department. A man must be a very good lawyer to be asked to enter this department, so it will not interest a boy until he is through with his

law training. Numbers of clerks are needed in the relief association and pension department, to keep the records of that work up to the minute. These are good openings for men trained for clerical work. Most roads have some insurance and real estate work to handle also.

**Opportunities in This Field.**—Railroad work has grown so rapidly in the United States that most execu-



THE ORGANIZATION OF A RAILROAD  
Showing the various departments

tives have as yet no perfect method of picking out the very best man for each position, and of following up his work. There were in 1920 75,000 railway conductors on the steam roads. There were about 110,000 locomotive engineers and about the same number of yardmen. There were also about 80,000 telegraph operators, a large part of whom were in railroad work. The railways employed 730,000 skilled laborers. In all, about one man in twenty-five in the United States earns his living by doing railroad work.

This means that there are always openings for good men.

The Young Men's Christian Association has a railroad department which is encouraged by the executives. Young workers are given the opportunity to take night school courses in the Railroad Y. M. C. A. which will fit them for promotion. Executives like to keep track of such young men.

Each year the inventors of the country are adding some new features to railway equipment to make the work less dangerous and more desirable. A young man who is willing to work hard and give a little more than is expected will have a future in this field.

**Electric Railways.**—This system of transportation has grown up in the United States in the last thirty-five years. It is especially suited to the streets of cities. In fact, the coming of the electric railway has made possible the growth of cities to a much greater size than would have been possible under the old conditions. Real estate values have increased enormously as a result of the introduction of this means of transportation. The lines can also be built through country districts where it is impossible for the steam lines to run on account of the expense of grading. The electric roads carry ten times as many passengers as the steam roads, but their use for freight has not been developed in proportion. The boy who is thinking of going into transportation should not overlook the possibilities of electric roads.

**The Kinds of Work.**—Electric roads, like steam roads, must have their share of skilled tradesmen.

Machinists, electricians, and civil engineers are all needed. In some of the large cities, where subways and elevated roads are needed, there are great chances for fine engineering work to be done. The roads also need executives and superintendents.



*Courtesy Philadelphia Rapid Transit Co.*

#### A MODERN ELECTRIC TRACTION CAR

Cheap transportation makes it possible for many people to live in the country and work in the city

**Conductors.**—This trade can be learned in a few days or weeks. It hardly deserves to be classed as a skilled trade. The conductor need not have an education equal to that required in many other occupations. But, since he, like the railroad conductor, is in constant touch with the public, he must be courteous and helpful. In too many cities the electric roads are hated by

the public. One of the reasons for this attitude may be the inattention and discourtesy of the conductors. A trolley conductor ought to know the city thoroughly, as he is called upon to answer many questions each day. The work is reasonably steady. Each conductor must, however, take his turn at night work. On holidays, when everybody else is having a good time, he is likely to have his hands full. There is little hope for promotion. The opportunities are few for such positions as inspector and announcer.

**The Motorman.**—Modern inventions have so improved the conditions under which the motorman works that many of the hardships and difficulties no longer exist. He usually has an enclosed cab, and the cars are fitted with air-brakes. In a large city he must be careful and alert in the congested districts. Trucks and automobiles move on the same street, and a careless motorman may make the expense for damages move to a high figure. The wages are usually the same as those of the conductor. The learner rides in the cab with some experienced motorman for several days, asking questions and observing. After a while he takes the controller when the traffic does not interfere too much. In a week or two he is ready to take out a car. He, like the conductor, has little prospect of promotion. Sometimes he is paid a little extra when he takes out a pupil. But in a few years he has reached the top of the wage schedule, and has nothing to look forward to.

**Driving a Truck or a Bus.**—A great deal of short-hauling is now being done by motor-truck. Passenger bus lines are now also operating out of many of our



large cities. In fact, quite a large number of interurban electric lines have been driven out of business by



*Photo. Brown Bros., N. Y.*

#### TRANSPORTATION BY AUTO BUS

On city streets where tracks are not laid or in the country the bus makes rapid transit possible. This is one of the busiest corners in New York City, Fifth Avenue and Forty-second Street

the passenger buses. The boy who likes to drive a car will be interested in this business. Many of the bus

lines started through the agency of some young man who saved up a few hundred dollars, bought a bus, and became so popular that he found it necessary to build up a regular fleet of cars. These trucks and buses use the state highways. They do not need to build their own highways, like the steam and electric lines. The truck has proved very helpful to the farmer in getting his products to the market. There seems to be a future in the business.

**Water Transportation.**—There are three main types of water transportation. The navigable rivers present one group of problems, the ocean and the lakes another, and the canals still a third. In the United States most of the canals have been abandoned, although they were very important a hundred years ago in developing the country. The navigation of the rivers has also fallen off since the Civil War. The Government is trying to revive this industry. The navigation of the Great Lakes and of the oceans is, however, increasing in importance year after year.

**The Workers Needed.**—A great many of the workers in water transportation must be skilled in trades that we have already studied. The men who build the ships must be skilled in carpentry and structural iron work. The men who attend to the engines must have the same training as the men who manage the engines in a factory or office building. On a large lake or ocean liner, a staff of men and women is needed whose duties are the same as those of the employees in a large city hotel. There are, however, occupations which are distinctive to water transportation.

**The Sailor.**—In the days when most of the ocean-going craft were propelled by sails, this was an important occupation. The work was hard and dangerous. The wages were low. They were asked to do everything from scrubbing the deck to climbing the masts. Unless a man had some education, promotion was impossible. But the boy who really wished to work up in this occupation might study navigation until he could pass his examination for mate's certificate and, in a few years, could qualify for a master's certificate. The boy of today who wishes to become a sailor either must train on one of the training ships which are maintained by some of the states, or he must serve as apprentice. The boy who is interested in this work may find it possible to learn the profession of pilot. These are the men who take the ships into the harbor and out again. The work is responsible and dangerous.

**Special Workers in Ship Construction.**—We have already noticed that the shipyard needs carpenters and structural ironworkers. But before the ship can be built it must be designed. This is a well-paid but very technical profession. The boy who wishes to become a naval architect or ship designer must be proficient in mathematics. He must have some information on strains and vibrations. A master designer can turn out a ship which will use less coal and go faster than a ship of equal size badly planned.

**Workers Who Make Navigation Safe.**—Although these workers are not directly interested in taking ships from port to port, their work makes the actual task of sailing much safer. Charts must be prepared with

great accuracy. Lighthouses must be built and operated. The channel must be kept open and the guiding lights and buoys kept in their proper places. All along the coast of the ocean and the lakes the life-saving service must be on the watch day and night for wrecks. These men help water-borne commerce greatly.



*Courtesy U. S. Coast Guard*

#### THE LIFE-SAVING SERVICE

Launching a lifeboat through the surf on the Atlantic Coast

**Transportation as a Service.**—Modern society is based on quick, cheap transportation. If this special organization is worth preserving, the work of the people who transport goods is needed work and useful work. A ton of coal is much more useful in your coal bin than it is at the mine. A grain harvester is much more useful in the farmer's field than in a Chicago warehouse. It is the worker in transportation who creates this added usefulness.

## THINGS FOR PUPILS TO DO

Questions for discussion in class.

Discuss the question of how many people helped make it a success when you took a railroad ride.

Are the interurban electric roads in your community prosperous? Can you think of routes in your county along which roads should be built? Have they suffered from competition with auto-bus lines?

Are there any navigable rivers in your state? Find out to what extent they are being used in freight traffic. Why is not this traffic greater?

What kinds of freight in your state could just as well be moved by canal or by river steamer? Would such a service injure railroads now in operation? Suggest ways in which motor trucks and river steamers could be used to perfect a system of transportation in the state.

Suggest some improvements in the highways which would benefit the farmers of your county. Suggest some improvements in the railroad service which would make your town more prosperous.

Have you ever seen a lighthouse? How would you like the position of lighthouse keeper?

Problems to be studied outside of class.

Ask some railroad conductor why he chose this occupation, how he likes it and whether he is sorry he became a conductor.

Ask some farmer how much he can haul in rainy weather on a dirt road. Make some calculations as to how much he could save if the road were paved.

If you know a city motorman, ask him what parts of his work he likes best; what parts are the most difficult.

If you live at a seaport, find out what vessels sail from your port, what goods they take out, and what goods they bring in. Trace one of them to its destination and find out just what goods were taken there.

Find how many miles of improved road your state has. How many miles are built each year? Is the automobile license money all used to build and maintain highways? Why not? How much of this money does the state collect each year?

Ask some trainman of your acquaintance how long a man



must serve as a trainman before he can hope to be a conductor. Ask him what features of his work are desirable, and what parts are the most troublesome.

If you are living at a seaport, try to meet one of the harbor pilots and obtain some of the details of his work.

### BOOKS FOR PUPILS TO READ

#### Stories and Fiction.

CAREERS OF DANGER AND DARING.—*C. Moffett*. Tells some of the difficulties of locomotive engineering.

DOWN TO THE SEA.—*Morgan Robertson*. A series of stories concerning ocean life in the merchant marine.

TREASURE ISLAND.—*R. L. Stevenson*. A fanciful story of the seas, pirates, and treasures.

#### Other Books.

TWO YEARS BEFORE THE MAST.—*Richard H. Dana*. A very good narrative of the trials and dangers of sea life in the old sailing ships.

LIFE ON THE MISSISSIPPI.—*Mark Twain*. How a boy learned to be a river pilot. The Mississippi commerce before the War between the States.

BOY'S BOOK OF RAILROADS.—*Irving Crump*. Tells of the work of railway employees and emphasizes the need of education and an alert mind.

TRAVELERS AND TRAVELING.—*Eva M. Tappan*. This is a very good book for the younger reader. It includes various ways of traveling and the problems of the workers.

THE MODERN RAILROAD.—*Edward Hungerford*. This is also a suitable book for young people on this subject.

RAILROAD AND STREET TRANSPORTATION.—*Ralph D. Fleming*. Has chapters of interest to boys who want to be motor-men, conductors, engineers, etc.

BOY SCOUTS OF AMERICA.—Contains a chapter on Seaman-ship.

CAREERS FOR COMING MEN.—*Saalfeld Publishing Co.* Several chapters on various phases of transportation.

OPPORTUNITIES IN MERCHANT SHIPS.—*Nelson Collins*.

PRINCIPLES OF BUSINESS.—*Charles W. Gerstenberg*. Chapter XXII deals with traffic problems and is of interest to freight agents.

## CHAPTER XIII

### COMMERCE

**What Commerce Means.**—When you think of commerce, do you imagine big vessels steaming into port loaded with interesting articles from many nations of the world? That is indeed commerce, but it is only a



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#### THE MAURETANIA

*A great ocean liner which goes back and forth across the Atlantic Ocean with cargoes of valuable merchandise.*

small part of the great commercial business of the world. Whenever people buy or sell or exchange goods they are engaged in commerce. You are directly engaged in commerce when you buy soap and sugar, or you are indirectly engaged in commerce when you type letters, manage the filing system, or keep the accounts for any business.

**The History of Commerce.**—People have not always regarded commerce as an honest occupation. Among the ancient Romans Mercury was considered to be the god of thieves, liars, and merchants. In fact, the word “merchant” is derived from the Latin “*mercator*,” follower of Mercury. This shows that commerce was not esteemed highly by the ancients. The Roman law allowed for the dishonesty of the merchant. If a customer was cheated, it was his own fault for being so careless. So for hundreds of years buying and selling was a game of skill between the merchant and the customer. But gradually a different



THE WANAMAKER STORE

One of the first merchants to establish a fixed price was John Wanamaker, founder of this great department store

spirit came over the business world. About fifty years ago, three American merchants worked out the same idea about the same time. Stewart, of New York, Wanamaker, of Philadelphia, and Field, of Chicago, began to do business by fixing a price for the goods and doing away with “dickering.” Other merchants in America have followed their steps, until this is the

regular way of doing business in this country. The rule became established that "the customer must be satisfied" and also the rule that "the customer is always right." Americans who have occasion to buy goods in a foreign country now find it annoying to be obliged to "dicker."

**Importance of Commerce.**—There is scarcely any vocation which may not be regarded as more or less commercial. Even the artist must sell his pictures; the professional athlete sells his skill, and lawyers sell their knowledge of law. The farmer is chiefly busy in raising crops, but farming is counted as a part of commerce, for the farmer sells or exchanges the excess produce which he himself does not consume. The teacher, the musician, and the truck-gardener should be as much interested in commercial matters as is the wealthiest New York or Chicago merchant. No one should feel that his interests run directly opposite to those of the big business man, nor should the Eastern city merchant feel that his problems are different from those of the farmer of the West and the South. All workers in the nation are bound together by common interests. For example: Cotton will suffice to show how very many occupations may be linked. Planters sell cotton to the mill to be manufactured. The textiles are bought in very large quantities by a wholesale dealer and are sold again in smaller quantities to a retail dealer, who in turn parcels out a few yards at a time to the woman who wishes to make herself a dress. You will easily see that in these sales of cotton cloth, many different kinds of labor have been involved. Field hands, farmers,

cotton pickers—all contributed toward the production of the crop. Other men assisted by growing food for these cotton producers, or by mining, smelting, manufacturing, and transporting metals and machinery with which planting could be made easier. Railroad men



*Reproduced by permission of the Philadelphia Commercial Museum*

#### COTTON AWAITING SHIPMENT AT NEW ORLEANS

Ships from all over the world come here for cargoes of cotton

conveyed the cotton to the mills, where factory workmen spun the thread and wove the cloth. Chemists, machinists, office workers, financiers—all helped. Then the wholesale dealer and his staff of men participated, and finally the retailer and another group of business workers helped to bring the cloth into the woman's hands.

Commerce, you see, enters always into all our lives.



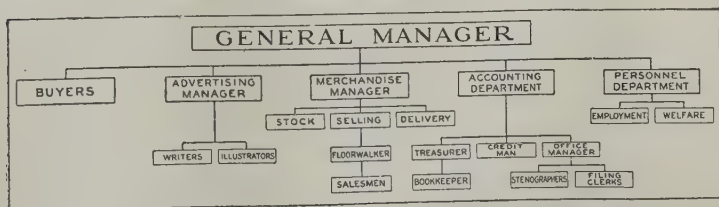
All purchases, all sales, and all exchanges are commercial, and we ought to know well and understand just what the traits are that we need for commerce.

**Commercial Occupations.**—Your task of choosing the branch of this great field of commerce into which you will fit best may, perhaps, be simplified if we divide commercial occupations into a few big subdivisions. It is impossible, of course, for us to make inquiry into every separate commercial occupation. But all the occupations may be said to be included in three groups. These groups may be called Buying, Selling, Office Work. Some of the details of office work will be discussed in a later chapter. If you believe that you might be interested in commerce as an occupation, study carefully the nature of these groups. Find the group which seems to hold particular interest for you. Then train yourself deliberately to enter that particular group.

**The Buyer.**—You have bought many things in your life. You will remember that one of the questions you ask yourself before purchasing is, "Is this article worth what I must pay for it?" You know that you cannot get full value for the money spent, unless you know a little about the market. For example, if you desire a pound of chocolates, you need to know whether the price is fair. Perhaps some other store sells the same kind for less money. You must know also whether it is not possible to secure more value for your money by purchasing another variety of sweets. Perhaps you can buy two pounds of peppermint candy for the price of one pound of chocolates. If you are merely looking

for something to satisfy your "sweet tooth" it would be better business to buy peppermints. You must consider, therefore, the possibility of substitutes. Finally, you must know whether, if you delay until tomorrow, the candy can be bought more cheaply. This is very necessary information in the business world, for many dollars can be saved by taking advantage of the market.

In commercial business a buyer needs exactly these three kinds of knowledge about the stocks he is to



THE ORGANIZATION OF A DEPARTMENT STORE

There are many excellent opportunities in the various branches shown here

purchase for his store. He must know values, he must consider the possibility of substitutes, and he must buy when prices are low and sell when they are high.

The professional buyer needs to know even more: he must understand quality. If he is buying wheat or silk or coal or any other commodity he should know whether he is buying first-class goods, and whether his whole purchase will be as good as the samples which the salesman shows him. He must know what other buyers are paying. In the case of farm produce, a buyer sometimes obtains the exclusive right to purchase a particularly desirable crop by paying a few cents

more than his rivals, or by agreeing upon a certain price with the grower at the time the crop is planted. The latter is a common practice among buyers for canneries and buyers of fruit. The buyer should know the opportunities for sales and the probable sales price, even though he does not sell the goods himself. If the market is flooded with raw cotton, he will keep his stock low, for he knows that the price will fall. But if there is likely to be a heavy demand for cotton, and there is little on the market, he will seek to buy large quantities. He must be a man of foresight, able to take into account future happenings and their probable effect on the market. A knowledge of current events and of probable political changes may also be very helpful. For example, a certain buyer for a factory stocked up with immense quantities of raw wool. The proprietors were becoming alarmed, when Congress passed a new tariff law. The result was that this factory made a very large sum of money with the cheap wool it had on hand.

**Learning to Be a Buyer.**—Because buying requires thorough knowledge of goods and trained skill and judgment, no one who fails to secure at least a high school and college training, especially in science, can hope for much advancement. If you would become a buyer, finish high school, and then go to a college where technical training is given and be sure to give close attention to English and foreign languages, for you will need them.

A buyer must never cease being a learner. He will be obliged to read extensively in all matters concerning changes in the kinds of goods and about the daily con-

dition of the market. At the outset he will have to take an unimportant position until he has learned enough to be trusted as a buyer.

In small stores the owner is the buyer; in large ones there are buyers and assistant buyers for each department or for each kind of goods handled by the store; for example, men's and boys' clothing, millinery, dress goods, and toys.

**Opportunities of the Buyer.**—Efficient buyers are scarce and some are unusually well paid for their work. Besides, they often have opportunities for travel. A buyer may be sent to any state in the Union or to remote corners of the earth. Buyers of women's clothing and hats go frequently to Paris, where the styles are made, while buyers of articles for men go to London and New York. Buying offers one of the very best opportunities in commerce.

**Selling.**—It is not so easy to sell goods as it looks. Most of us think of a salesman as one who stands behind a counter, waiting for customers. But not everyone who can measure or count articles and who can give correct change is a good salesman. The successful salesman must know how to encourage customers to buy, but he must not make them buy goods that they do not want.

**Knowledge of People Important.**—Some of you have tried selling papers. Those who have been successful know that not every customer wants to read the same kind of news. You cannot sell a paper to a statesman by calling his attention to the sporting news, for he desires to know the news about Europe, nor would you

try to sell a paper to a high school boy on the plea that the paper has a first-class woman's page. If you sell papers, you are practicing salesmanship.

**Knowledge of Goods Important.**—The good salesman knows his goods so thoroughly that he can answer any question concerning them. This sometimes means much studying after working hours, but this time of studying may be shortened if the salesman has had a good education. He must be agreeable and patient in his manner, for no customer wishes to return to a store where the sales force is unobliging. He must try to know just what his customers desire, and should try to help them find exactly those articles which they require. He must not try to work off on them "something just as good" when he knows the substitute to be inferior. He must be strictly honest, and willing to tell the truth about the goods which he is selling.

When selling is mentioned many of us think only of the salesman or salesgirl in a store. But since almost everyone is himself a salesman, no matter what his occupation really is, it is desirable that everyone develop these qualities. The lawyer and teacher sell their services, blacksmiths sell their strength, and dentists sell their skill. Each of you will some day wish to sell your ability, whatever it may be.

**Opportunities and Rewards.**—Because salesmanship is so extensive and varied it is difficult to say just what the pay may be. Often no salary is paid, but the salesman receives commissions on his sales. In this way the amount earned depends upon his skill, energy, and the opportunities he has.



It is equally hard to state the education needed by a salesman. Intelligent boys and girls with comparatively little education may make good, but it is better to study as much as possible if one desires to rise to good positions or to travel. Many of the principles of salesmanship are learned while working.

One selling occupation that appeals to many boys and girls is that of traveling salesman. Before entering this field, however, it is always well to consider the possibility that the increase of advertising in the future may render the traveling salesman less necessary. The work is also apt to grow tiresome after a few years when the novelty of living in hotels and on railroad trains wears off.

**Advertising.**—Emerson once said that if you could make a better mousetrap than anybody else, though you hid yourself in the forest, the public would make a path to your door. This is perhaps true, but the business of making mousetraps would grow very slowly at that rate. Most modern business men want to tell the public what they have in such a way that the public wants to buy. This desire gives rise to the profession of advertising. A study of any of our great magazines will be rewarded by some interesting lessons in this art. Every big store also has a staff of advertising writers whose duty it is to prepare the full page advertisements which appear in the daily papers. To enter this field, the learner should first of all have an excellent command of the English language. Then there must be a high degree of sympathy with the feelings, desires, and even with the faults of the public.

The advertiser must be able to arouse the desire to buy on the part of the public. The learner should also have some talent for drawing or posing groups for photographing. The Young Men's Christian Association offers special training in many large cities. There are also courses offered in some of the universities, and in evening high schools. If the learner can get a position in one of the big advertising firms, it is possible to work up to a very good position.

**The Work in the Office.**—In any large commercial enterprise, whether manufacturing or merchandising, there is a great deal of "office work" to be done. These tasks, and the preparation of the worker for the job, will be taken up more fully in the chapter on "Clerical Occupations." Although the office force seems to have very little to do with the actual work of the store, yet their work is very important. An official of the United States Government who is obliged to deal with many business failures has recently said that a very large percentage of business failures is due to improperly kept office records. The people, therefore, who write letters, take care of the accounts, and prepare the statements have a large share of responsibility for the success of the business.

**Credits.**—Comparatively little business is carried on with cash. In most instances, business men rely on credit. Almost every business, therefore, has to have a man or a woman whose duty it is to see that customers can be trusted to pay their bills. This is a position of very great responsibility, and the workers in this field must be highly skilled and thoroughly trained. They

must be acquainted with the finances of their own company, and the business standing of its customers. They must know the character of the people to whom credit is extended, and they must guard against loss of money by unwise trusting. Usually this department is also intrusted with the collection of overdue accounts.

Because this is an important occupation, the workers must usually be very well trained indeed. Experience in banking is valuable, but not always required. Collectors who have exceptional ability may rise to the post of credit manager.

**Real Estate.**—A real estate broker, or as he calls himself, a "realtor," is both a buyer and a salesman. In addition to knowledge that any buyer or salesman needs, a broker in real estate must know much law. In the exchange of property from one owner to another, he must be careful about titles, mortgages, and taxes on the land. He must know about the future of land values in the neighborhood where he buys and he needs to be alert in regard to all progress and building in every section of the city or vicinity where he is doing business.

After graduation from high school, or college, the future realtor studies real estate law, business methods, and the chief facts about architecture, surveying, and the erection of buildings. Then he usually begins in some small position with a well managed real estate office, so that he may learn the business under an experienced worker.

**Banking.**—Someone has said that money is the life blood of civilization. By this he meant that without money there could be no trade, no transportation,



© Ewing Galloway, N. Y.

# WALL STREET, NEW YORK CITY

The banking center of the United States. In the distance is old Trinity Church.



and no manufacturing. Without money we should have to go back to the old-fashioned trading such as you may have noticed when farmers bring butter and eggs to the store and trade them for groceries. Think for a moment how essential money is, and you will realize that the business of caring for money matters opens a very extensive field of occupations.

All of you are familiar with a bank, but perhaps few of you ever have stopped to understand just what a bank does. It has many other functions than just receiving deposits and cashing checks. Chief among its activities is the lending of money to business men, or to those who possess land or bonds but who need ready cash. It helps its depositors by drawing up wills in legal form, by advising its customers as to the kinds of investments to make, by examining titles to real estate, by selling insurance, by renting safety-deposit boxes, and by giving many other similar services.

You will see, then, that banking is more than standing behind a barred window and talking pleasantly to the patrons. If you desire to become a banker, you must, like a bookkeeper, be very fond of arithmetic, and you must be very accurate. You must be neat and cheerful and quick. Above all, you must be rigidly honest. But these characteristics are only starting points in your needs. Unless you have higher qualifications you will not advance rapidly.

**Your Judgment Must Be Good.**—Clients of the bank will desire to invest money and they will ask your advice. Upon your decision will rest their future happiness. If you advise them to buy certain stocks,



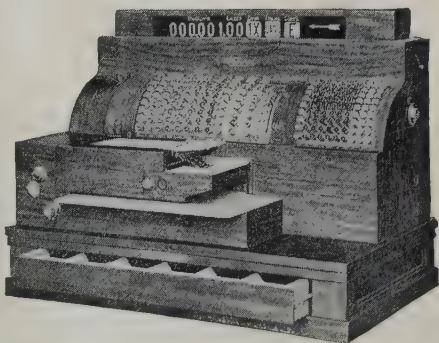
and those stocks prove worthless, you will have wasted the savings of your friends and you may cause worry and want. So your judgment must be reliable. Those of you who "jump at conclusions" without thinking carefully upon all problems will make poor bankers, for you will not be able to make wise judgments for your customers. The good banker is neither hasty nor prejudiced nor careless.

Also, to be successful in banking he must have a wide range of interests. He must keep fully informed on important affairs all over the world for he may unexpectedly be asked to lend money to people engaged in all sorts of business. He must understand the prospects for future changes in industry and commercial enterprises. He must be able to read character well, so that he may know whether it is safe to lend to certain individuals.

It can be seen, then, that a banker must have all the traits of a real-estate man, a lawyer, a manufacturer, an accountant, and a credit man. To gain a knowledge of these many subjects, it will be best for you to go through high school and college and then, if possible, to study banking in some good graduate school. Do not be misled by advertisements promising you that you may "learn by mail." Many banks, however, prefer to give the necessary graduate training themselves. They will invite the best seniors in the colleges to learn banking at the expense of the bank itself. Frequently they send the student to foreign countries, so that he may learn European, Asiatic, or South American business and financial methods. But to

gain one of these very desirable appointments one should be a very good student.

If a man thoroughly learns the banking needs of his community, he may, in the course of years, earn a large income. These large incomes, however, come only to the few. During the first few years the learner will receive very small wages. This is because he is being trained, and during his early training he will not be worth much to the bank. After he completes the bank's courses, however, his pay may increase rapidly if he can prove his value to the bank. Another desirable feature of working in a bank



*Courtesy National Cash Register Co.*

#### THE CASH REGISTER

This machine makes it easy to keep track of the essentials of a merchandising business

is the exceptional social standing which it is apt to give.

The higher places, with the bigger pay and the greater opportunities, are now often given to college-trained men. Formerly it was possible to go into banking as an office-boy and gradually advance to the top. But this is practically impossible today. The best way to climb out from the very low-paid jobs in banking, as in any other occupation, is to win your college degree.

**This Occupation as a Service to the Community.—**

We have already seen that in pioneer times there was little need for exchanging products, since each farmer raised and manufactured nearly everything necessary for his comfort and welfare. But since tasks have been divided and subdivided to such a great extent, there must be some persons whose duty it is to get the product from the maker to the user. This is an important and useful duty. It has been many years since the merchant went into business for the purpose of cheating or getting the better of his neighbors. Now he wants to give them service. He selects the goods they want, keeps them until they are ready to use them, and often delivers them to the customer's house. He wants to please his customers, as that is an excellent way to get new customers. Too often we think of the merchant as selling something to us for more than he paid for it. But the services rendered to the customer should be paid for. The price to the customer does not include merely the price of the goods, but also the price of the service which the merchant renders to the community.

**Overhead.**—Nor can the customer or the merchant count the entire difference in prices paid and received by the merchant as profit. This difference in prices must help to pay for the merchant's advertising, light, heat, rent, and interest, also for bad debts and delivery. These charges often leave little or nothing for the merchant. In fact, the great number of failures in the country, ranging from 200 to 500 each week for the entire United States, is largely due to the inexperience and even the ignorance of the merchant on the subject of overhead. The man who is able to make an out-

standing success in the field of commerce is the man who can tell exactly what it really costs him to place the goods in the customer's possession. If a boy is not willing to study these details, he may as well make up his mind to enter some other occupation.

**Owning Your Own Business.**—It is currently reported in our large cities that our American born boys lack the nerve to build up businesses of their own. We see the clothing trade in the hands of the Jews, candy stores built up by the Greeks, and the wholesale and retail fruit trade controlled by the Italians. The American boy seems to prefer a nice, easy desk job at which he does not need to wear an apron or soil his tender hands. In this way he gets the time he thinks he needs for dances, theaters, and other diversion. He does not seem to realize that business is one of the finest games ever invented. Fifteen years later he is still pushing a pen for thirty dollars a week (if he is lucky) while the immigrant who began business perhaps with a push-cart is now buying the best site in town, building a fine store building, and riding in an automobile. Then the American boy wonders what is the matter. The fact is, as we have already seen, that the "white collar" jobs are overcrowded. The big opportunities for service as well as for income are in the fields of hard work, planning, and individual initiative.

**Where to Begin.**—Whenever a young man would ask Horace Greeley what to do to get ahead in the world, the answer would be, "Go West, young man, go West!" But Doctor Conwell, in his lecture "Acres

of Diamonds," urges young people to examine carefully the opportunities existing in their own home towns before wandering around all over the country hunting for some easy way of getting rich. If the boy leaves his own town to seek his fortune, the chances are that somebody else will discover the opportunity he overlooked at home, and make the fortune he failed to find in the big city. One of the saddest things to be observed in our present-day civilization is the crowd of eager, hopeful young people crowding each year into the cities. Here they have long, hard years before them. They really ought to be in their own towns, establishing homes of their own, helping to govern the town, and building up the prosperity of their own communities.

### THINGS FOR PUPILS TO DO

#### Questions for discussion in class.

Have you ever sold or "swapped" anything that was your own? What qualities of salesmanship did you display in the transaction?

Should a good salesman coax his customers to buy something which they do not want? Give reasons for your answer.

Have you ever made a collection of anything such as stamps, pictures, or pretty stones? If so, how and where do you keep them? Are they arranged systematically? Does your arrangement of the collection show you whether you have the natural qualifications to be neat and accurate in an office doing such things as filing or bookkeeping?

Think of some closet or drawer that is for your own possessions. What is its condition right now as to arrangement? Have you naturally the qualifications of neatness and system that an office worker should have?

Describe a transaction in which you have been a buyer.



Tell what you did that will illustrate the things to consider in making a good buy.

Problems to be studied outside of class.

Interview a buyer and find out what natural qualifications are desirable; what education.

Make a list of all the different kinds of insurance companies that you can find out about.

Make a list of qualifications for success in business, such as regularity, promptness, neatness, cheerfulness, and others. Pretend that school is your place of business. The teacher is your employer and you are the worker; mark yourself on the average of 100 for the way you live up to your list of qualifications week by week.

Make a list of things every employer has a right to expect from his employees.

Make a list of things every employee has a right to expect from his employer.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

LETTERS FROM A SELF-MADE MERCHANT TO HIS SON.—*George H. Lorimer*. A story of the experiences and advice of a merchant who had succeeded.

### Other Books.

THE GIRL AND THE JOB.—*Hoerle and Saltzberg*. Pages 27 to 30, selling in a store. Pages 48 to 50, the girl as a real estate salesman.

MEN WHO ARE MAKING AMERICA.—*B. C. Forbes*. Pages 310 to 318, 344 to 351, and 420 to 434 give stories of some of the great American retail merchants.

HOW TO HANDLE AND DEVELOP YOUR OWN BUSINESS.—*A. W. Shaw Co.* This has several valuable chapters. Chapter VII deals with selling methods.

VOCATIONS FOR BOYS.—*Weaver and Byler*. Chapter XXVI deals with the art of advertising; Chapter XXVII, with the occupation of banking.

WHAT CAN A YOUNG MAN DO?—*Frank West Rollins*.

Chapter VI tells of the work of the merchant; Chapter X, about banking; Chapter XI describes the work of the broker; Chapter XX describes advertising, and Chapter XXXIV explains the work of the traveling salesman.

HELPFUL TALKS WITH GIRLS.—*Elizabeth Kelling*. Chapter XV tells about women as buyers for individuals. Other chapters take up other problems of women in the commercial field.

THE PRIMER OF SCIENTIFIC MANAGEMENT.—*Frank B. Gilbreth*. There is an excellent chapter on the work of the manager.

NEWSBOY SERVICE.—*Anna F. Reed*. Interesting to boys who sell papers. Shows some of the possibilities of this job.

## CHAPTER XIV

### CIVIL SERVICE

**Why We Have Civil Service.**—When the population of our country was small, very few people were needed to carry on the affairs of the government. Men who were elected or appointed to offices selected their helpers from among acquaintances. Often the persons selected were those who had been active politically. When another political party came into power some of these employees lost their jobs and persons belonging to the winning party took their place.



THE POSTMAN

After President Jackson was inaugurated so many government employees were dropped that there was considerable scandal. It was difficult for the new office-holders to do the work of the government, but the practice of dismissing employees every time another party won was continued until

Uncle Sam's post office department is one of the largest businesses in the world. It is under Civil Service

President Garfield was shot by a disappointed office-seeker. Soon after this a national civil service law was passed.

Much better work is done by civil service employees than by people appointed for their political activities. For example, if an accountant is wanted, the regulations are such that only a trained auditor can get the position. He is able to become familiar with his work because he will not be removed if another political party happens to gain control. If in auditing accounts he finds that someone has been dishonest, he can expose the dishonesty without fear of being punished. There are so many advantages to the civil service method of appointing workers that, for most positions, the states and larger cities also have adopted civil service regulations.

**Civil Service Occupations.**—The government uses the services of workers of every kind. There are positions for persons who are not skilled workers and who have had little schooling. Such occupations as watchman, janitor, and fireman are included in this group. Many civil service positions can be filled by persons who have a good education even though they have not learned to do any particular kind of work. Several post office positions and most of the clerical positions in the different departments in Washington do not require any special training except that which can be secured in an elementary or high school.

Finally, there are positions for persons who are highly skilled. Many office occupations and practically all the skilled trades and the professions are represented

in this group. Stenographers, teachers, bricklayers, machinists, dentists, engravers, and farmers are some of the workers who belong to the group of specialists.

**The Advantages of Working for the Government.**—Civil service employees have many advantages that the ordinary employee would like to have. The working hours are short, and there are long vacations each year with pay. Hard times do not affect civil service workers and there is little danger that they will lose their positions. Each month part of the salary of the worker is kept out and this money goes toward a pension fund to be used for those who are retired on account of age. More than half the government civil service employees are able to live in their home communities. Many young men and young women secure civil service appointments in Washington and use their spare time in getting a higher education. If they wish to remain in government service they find that their efforts usually bring promotion. If after completing their education, they wish to work for a private employer, they can generally secure positions that are attractive. For some reason or other, employers like to get workers who have been employed by the government for a short time.

**Disadvantages of Civil Service Employment.**—Very few of us do our best work unless we have an incentive. This incentive may be the chance to secure rapid promotion, or the fear of losing one's job, or perhaps the possibility of securing higher wages for unusual work. Such incentives as these, and many others, are not so strong in government work as in ordinary employment.



There is also the disadvantage of "red tape." Operating our government is an enormous business, and, as in any big business, many records are necessary. In government work, however, many records are kept



THE FIREMAN

Fire protection saves hundreds of lives and millions of dollars worth of property every year

after they are no longer useful. A government employee who was once grumbling about his work was asked what the trouble was. He replied: "I had just worked out a fine system of records, when the war came along and spoiled it all, because things had to be done in a hurry." Of course, there are good reasons for much of the "red tape" but if you are the kind of boy or girl who likes

to do your work rapidly, you may not care for civil service employment.

Salaries paid to most civil service workers are low. What you can earn in a civil service position may seem large to you if you live in the country or in a small town. But you must remember that it costs a great

deal to live in the larger cities. In order to make a living many government employees earn money outside their regular hours.

**Preparation Needed.**—If you want to secure a civil service position, the training you need is exactly the



*Courtesy Bureau of Police*

## CONTROLLING TRAFFIC AT A BUSY CORNER

Civil Service protects the police officer and makes it possible for him to do his duty fearlessly

same as what you would need for this same kind of work elsewhere. For stenography, a business course is necessary; for the skilled trades, school training or apprenticeship gives all the preparation that is needed. If you want to do clerical work your best plan is to

stay in school until you have completed the high school course.

Several correspondence schools advertise that they prepare for civil service positions. Usually their courses are worthless. If you have a common school education you will not need such a course. The person who needs to review common school branches before taking a civil service examination can save money by getting help from a school teacher. The advice of these schools about how to secure an appointment can be had for nothing. Regarding such schools the United States Civil Service Commission states that "The commission has no connection with any civil service school or institute doing business by correspondence or otherwise, and has no information to furnish in regard to such schools. Representatives of schools are not permitted to inspect the examination papers of competitors. Authentic information in regard to examinations may be obtained only from the United States Civil Service Commission or its duly authorized representatives, and without cost. The commission is in no way responsible for statements contained in advertisements of schools."

**Information About Civil Service Positions.**—As in other kinds of employment, you can get a civil service appointment only when there is a vacancy. If you happen to be living near a large city, go to the post office, or custom house, where you will see lists that show the kinds of positions vacant. For each position there is usually a one-page announcement that gives all the information needed, including directions for securing an application blank which must be filled out.

If you cannot go to a post office or custom-house for information, you should write to the United States Civil Service Commission, Washington, D. C., telling what position you are interested in. If you wish to work in one of the departments in Washington, such as the Treasury Department, for example, you should ask for the bulletin on departmental service. If you want to work in your own state or somewhere else outside Washington, ask for the bulletin on field service. You will receive instructions that tell you how and when examinations are held.

Civil service employees are selected from among those who pass with the highest grades. Even if your grade is high you cannot be sure of an appointment. Each state is allowed a certain number of civil service employees, depending upon its population, and it may be that your state has its share, especially if you are close to Washington.

Preference is given to certain applicants, such as honorably discharged soldiers and others. You may find it difficult to get an appointment if other members of your family work for the government. Points such as these can be learned by carefully reading the bulletin sent out by the Civil Service Commission.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

Are the clerks in the local City Hall appointed from a Civil Service examination list?

Discuss some of the reasons why a civil service appointment obtained in an examination causes a man or woman to give

better service to the Government than an appointment through political "pull."

Does a civil service man need to have the habits of initiative as much as a man in private life? Give your reasons for the answer.

### Problems to be studied outside of class.

Talk with one of the local mail carriers. Find out why he chose this work and how he likes it.

Find out whether the State Highway Department appoints the inspectors from an eligible list, or whether they obtain their positions through political influence.

Make a list of positions which you think should be filled from an eligible list, but which are now being filled through election or through political influence. What about members of the City Council or members of the State Legislature?

Do you think the President should require the members of his Cabinet to take an examination before being appointed? What are the reasons for your answer?

Divide these offices into two groups—one of which you think should be appointed from an eligible list and the other appointed for other reasons: policeman, fireman, jurymen, mayor, judge, teacher, chemist for the waterworks, ditch-digger, constable, school director, tax collector.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

BOY WITH THE UNITED STATES FORESTERS.—*Francis W. Rolt-Wheeler*. Telling some of the problems and responsibilities of the Forestry Service.

BOY WITH THE UNITED STATES LIFE SAVERS.—*Francis W. Rolt-Wheeler*. In which the work of this service is described.

BOY WITH THE UNITED STATES SECRET SERVICE.—*Francis W. Rolt-Wheeler*.

BOY WITH THE UNITED STATES WEATHER MAN.—*Francis W. Rolt-Wheeler*.

### Other Books.

BOY'S BOOK OF POLICEMEN.—*Irving Crump*. Tells how



the patrolmen, the traffic men, the mounted men, and the motor-cycle men perform their services.

FIREFIGHTERS AND THEIR PETS.—*A. M. Downes*. Interesting accounts of the heroism and perils of the New York firemen.

BOY SCOUTS OF AMERICA.—The chapter on life saving.

STARTING IN LIFE.—Pages 321 to 336. The public service and the civil service examination.

TRAVELERS AND TRAVELING.—*Eva M. Tappan*. Chapter II—how the railroads carry the mail.

HELPFUL TALKS WITH GIRLS.—*Elizabeth Kelling*. Pages 156 and 157, women and the post office.

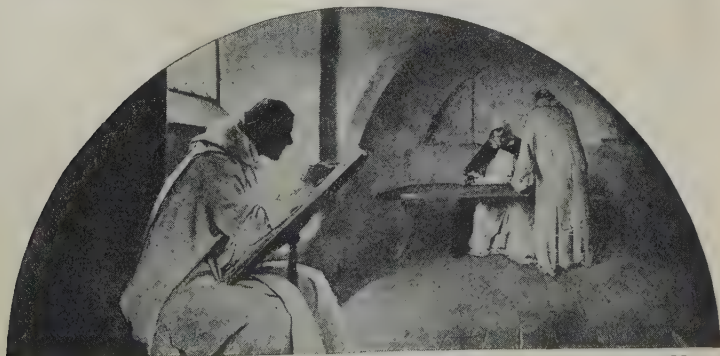
## CHAPTER XV

### PROFESSIONAL SERVICES

**The Professions.**—In a savage community there will always be found one man to act as the leader in war and in government, and another who is an authority in matters of religion, teaching, and healing. These same conditions existed in the days of our ancestors. As time went on, however, and as men learned more and more about the world about them, it became difficult for one person to be an authority on several subjects. The duties of these leaders were divided and subdivided until today we find many occupations each of which requires years of training. These leadership occupations we generally call the professions.

**Religious Leadership.**—A common characteristic of man through the ages is his recognition of God as the Ruler of the Universe who exercises control over the lives of all mankind. And as far back in history as we have any records—perhaps much farther—there have always been men and women who were believed by their fellow beings to be closer to God than the ordinary man or woman. In some of the nations of the ancient world these specially favored men and women formed a class apart in the State, as was the case with the Egyptians and the Hebrews. In other nations no such group was to be found. For hundreds of years in Europe, men and women who devoted their lives to religion were

under special and different laws from the ordinary people. They were the students who kept alive the traditions of learning in the days when few even of the rich and powerful could read and write. Their learning placed them under certain obligations to the people of the community in which they lived. They served not only as religious leaders, but as lawyers, teachers,



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#### THE MANUSCRIPT BOOK

In the Middle Ages all books came from the monasteries, where they were laboriously copied by hand

and physicians. Some of them became the trusted advisers of their kings. Leaders in the fields of science and literature were also to be found in their ranks.

**Opportunities in This Profession.**—If a young man desires to become rich as a result of his life work, if he wants to drive expensive cars and live in a fine house—in short, if he is fond of the luxuries of life—he should not enter this profession. He will be disappointed and unhappy if he does. But if he is a man of deep insight into the human heart, a man of broad sympathy

for human joys and human sufferings, and above all, if he has come to believe in God as an all-wise and loving Father of all mankind, he may well enter this field.

Here is a wonderful opportunity for good. Into the lives of everybody come moments of perplexity, doubt, fear, and grief. If there is somebody in whom they



#### THE WORK OF MISSIONARIES

A class of Christian High School girls with a native Christian teacher can confide, and who will have the necessary word of comfort and guidance, their troubles will disappear or—what is often better—be honestly faced. In addition to this duty, the religious leader from time to time in public addresses tries to bring his people closer to God. He serves as their teacher in the religious field, instructing especially the young people of his group in the doctrines and practices of his religion.

Many religious groups, especially the Christians,

deem it an important duty to send people into lands where their teachings are unknown, and try to bring these non-Christian peoples to a knowledge of the truth as they see it. Such religious teachers are known as missionaries. They have not only brought tens of thousands of people into the Christian Church, but they have also helped to create friendly feelings for the Christian nations in the minds of their followers.

There is great need of young men and women to enter upon religious work, where the opportunities for doing good were never greater. All religious denominations and sects have done most valuable work for humanity both in war and in peace. In our large cities these organizations have association centres where the young people may gather under wise leadership.

The young man who enters this field and then discovers that he has some ability as a writer need not neglect this newly discovered talent. Almost all the churches have papers and other publications for the purpose of extending their work. The editors of these publications are usually selected from the leaders who possess the talent for this work. The professors in the colleges which are maintained by the various churches are usually men who have had some experience in the field of religious leadership.

**Preparing for This Work.**—The young man or the young woman who plans to make religious leadership a life work must first of all have a sterling character. The example of the life of the leader is much more powerful than the words he speaks. Without the character, the



teachings are "as sounding brass or a tinkling cymbal." Then, the prospective leader should try to acquire a broad sympathy for all humanity. That does not mean that he is required to excuse wrong and crime. But it might be well to leave the final condemnation of the wrongdoer or the criminal to the judgment of the all-wise Father. Next, the learner needs qualities of leadership. For he must be able to lead before he can be any kind of leader, especially of religious leader. Finally, he needs all the education that it is possible for him to acquire. In this day when so many men and women have gone through high school and college, there is no great willingness to follow the leadership of a poorly educated man whose mistakes tend to hide what good he might otherwise be able to accomplish.

The usual course is for a young man to obtain a college degree, and then to enter some theological seminary for a course of special training. Many of the churches have special funds to be used for helping young men through this long course of training. No student need be ashamed to receive this aid. The lawyer or the physician, if successful, will earn a sufficiently large income to pay off the expenses of his training. The religious leader cannot hope for such financial opportunities, and it is therefore right that he should be helped.

**The Professional Openings.**—Practically every religious group in the country today is complaining that not enough young men are undertaking the work of religious leadership. Those in the field are generally

crowded with work. Some of them are serving three or four churches. Other churches are being served by college students. Graduates of the seminaries are usually elected to some church as soon as they have finished the training course.

There is a growing tendency for women to enter this field. Any boy or girl interested should have a talk with his or her clergyman about the opportunities and the best methods for getting started in this work.

**Teaching.**—As the idea of people as to the purpose of the schools has changed, so, of course, the duties of the teachers have changed. At the time of the American Revolution the three main subjects which were studied by the boys and girls in school were the “three R’s”—Reading, Writing, and a little Arithmetic. Everything else that children needed to know they learned outside of school. They listened to the talk of the older folks in the home and learned about politics and government. The mother or grandmother had a variety of herbs for various types of illness. Girls were taught to cook, spin, and weave. Boys could make harness or shoes besides doing the ordinary work of the farm. Apprenticeship was still common, and boys who wished to learn some trade were bound out for a term of years for that purpose.

Today all has changed. Few teachers of today undertake to teach everything in the school. The country districts are building consolidated school-houses in which each teacher has only one grade or one subject to teach. And how much more there is to learn! Many of the things formerly taught in the

homes are now taught in the schools. Perhaps it will not be long before the child can learn anything it wants to in the public school.

**The Qualities of a Good Teacher.**—The foremost quality needed by any teacher is sympathy with childhood. The child lives in a world of his own, and it seems difficult for a grown person to recall this world which he himself has lived through. But if he cannot, if children seem to him just small sized grownups, it would be better for such a person to get a job in a stone-quarry. Then, the teacher needs patience. Some very trying things can happen in the schoolroom, and the teacher who loses control of himself has failed in the emergency. The teacher needs to develop a good character. This is just as important for the teacher as for the religious leader, since he is dealing with younger people, and consequently people more easily influenced. A teacher should be able to look on the bright side of things. If a person has a gloomy mind, there is no need to make innocent children suffer because of it. And a teacher should be openminded. A teacher who has stopped receiving new thoughts should stop teaching also. Last, a teacher should have a good mind, which should be thoroughly well trained. Children can ask an endless number of questions!

**The Preparation of the Learner.**—There are almost as many kinds of teaching as there are of farming or manufacturing. Little children of four or five years of age come to the kindergarten. These children continue in school until they finish with the high school course or go to work. Many who finish the work of the high

school take up the work of learning more in colleges and universities. There must be teachers for every age of pupil or student, and for students of every stage of the educational process. So when a person is learning to be a teacher he must decide just what kind of teacher he wants to be.

Each state has established normal schools for the training of teachers. Because the state hopes to benefit by the work of the teacher after he is sufficiently prepared to begin his work, most of the states allow the students to receive their instruction free at the normal school. The student is taught something of the subjects which he hopes later to teach in his own school. In addition, he receives training in methods of teaching and in the practice of teaching under the supervision and care of some expert who can explain right methods, point out mistakes, and help him with his problems. Scientists have discovered many interesting facts about the human brain and its working. The normal school student spends some time on this study, which enables him to solve such problems in his profession as may come up in the course of the work.

If the teacher is planning some special type of work, he must, of course, undergo a special training for the purpose. A teacher of music, art, and special branches of all kinds should be a master of his particular branch. If the student is planning to teach in a high school, a college course is almost imperative. Such a student will profit greatly by taking courses in a normal school, however. The accusation has been made that there is poorer teaching in the high schools and colleges than in

the grades. This need not be true if the teacher has had a normal training.

To teach in a college or a university requires a long and hard training in the special subject undertaken. But teaching is unlike law or medicine. A person can begin the work quite young; then, if he is interested, there are opportunities for him to advance in the profession by means of additional study in his spare time. Many of our school executives have worked themselves up in the profession in this way from country schools to positions of great responsibility.

**Disadvantages.**—There are teachers of many years' experience who claim that this profession has no disadvantages. Nevertheless, some features of the work have been pointed out at various times as tending to make the occupation undesirable. In the first place, much of the work is indoors. While modern sanitary schoolroom construction has remedied much of the inconvenience of indoor work, yet it remains true that some people should be in the open air as much as possible. Such persons ought not to undertake this work. Some people think that those who do not deal with grown-up persons render themselves unfit for the strain of life. This may well be disputed. A person who can win children ought to get more real happiness out of his occupation than one who sells aluminum ware or coffee.

**Advantages.**—The teacher, in recent years, is receiving fairly good pay. The salary of the teacher compares favorably with the average income in other professions. Of course, the exceptional lawyer or surgeon can com-



mand very high fees. But if an average were taken, it would probably be seen that the teacher has little to complain of. School superintendents are, in many cases, very well paid. In addition, many states have introduced a system of retirement allowances by means of which an old teacher can retire from work and receive a living allowance for the remainder of his life.

The opportunities for promotion are exactly what the teacher can make for himself. There is perhaps less of politics and more of real merit in school promotions than in any other professional field. Then, teaching is not affected by bad times. A community will make almost any sacrifice to keep its schools open. While the teacher may not receive so large an income in boom times as some other workers, he is not discharged when the slack times come.

But the great advantage of teaching over many of the other professions is the wonderful opportunity for serving the community. The future of the State is in the teacher's hands. As he trains his pupils in habits of loyalty, good citizenship, and honesty, so will the leaders of tomorrow be loyal, honest citizens. The farmer may raise an abundance of food. The manufacturer may make a great variety of finished products. The railroads may transport goods and people quickly and cheaply. The city may have a splendid police and fire fighting force. But if there are poor schools, or none at all, the community will suffer. Teaching is the profession selected by the noblest and purest Man that ever lived. The boy or girl who undertakes the respon-

sibilities of this profession, and performs its duties well, is, indeed, a good citizen.

**The Lawyer—Importance of the Profession.**—Ever since the days of ancient Rome one of the features of a civilized community has been the laws that the people obey. Crimes are punished and justice administered according to these laws. For this reason, in every civilized community we find men who have made a special study of law, and who, for money payments, help out their neighbors when it becomes necessary for them to appeal to this law. This makes the profession of law a very important one. And since many of the great corporations pay big fees for legal advice, since many men make large sums of money by depending upon the advice of men trained in law, the rewards for a good lawyer may be very great.

**Learning to Be a Lawyer.**—A boy or a girl who wishes to be a lawyer should first of all find out what the state requires, first, of the student who wants to begin the study of law; and second, before the lawyer is admitted to practice in the courts of the state. These requirements differ in the different states. It is better, however, for the student to have more training than the state requires rather than the least that will let him through. His progress in his profession will be so much more rapid if this is true. The general requirement before beginning the study of law is a high school course. If the student can graduate from college before beginning, so much the better. He can then enter some lawyer's office for study, or he can enter the law school of some university. A great many civil service

employees in Washington take advantage of the law schools in that city and prepare themselves for this profession. Having completed the study of the law up to a certain point, the student takes the bar examinations and is admitted to practice in the courts of his state. If he wishes to go to another state, it is usually necessary for him to take the examinations in that state also. Many good lawyers claim that this is the point at which they really begin to study. A lawyer cannot practice very long without additional study.

**The Opportunities of the Profession.**—In smaller communities the lawyer is not a specialist. One day he may have a will to write. The next day he defends an accused person in a criminal court. Following this, he may be asked to draw up contracts for a partnership or the papers for a patent. In the large cities it is more usual for the lawyers to become specialists in one branch of the law. A great many of these specialists become bankers or real estate men. It is of great advantage to a young man entering one of these occupations to have a training in law.

It may be safely said that this profession is overcrowded in many part of the country. Hundreds of men trained in the law are found in positions where they are not called upon to use their special training. On the other hand, if a young man wishes to enter public life and serve his country as a member of the legislature, or as governor, a knowledge of the law is of great use to him. A large proportion of our presidents, governors, members of the legislature and of Congress are lawyers. Practically every state

requires judges, at least in the higher courts, to be learned in the law.

**The Service of the Lawyer to the Community.**—It is the lawyer who keeps things running smoothly in



*Courtesy Bureau of Health, Phila.*

#### SCHOOL MEDICAL INSPECTION

Finding physical defects in time often saves children from a lifetime of illness

our very complex modern civilization. The business man might make many expensive mistakes in a year if not restrained by the advice of his lawyer. Many disputes are settled according to his suggestions. Contracts properly drawn up and passed by a good lawyer can be depended upon. Many persons would

be guilty of acts harmful to the community if not restrained by their lawyers. Even honest and well-meaning men could snarl business up terribly if they did not have proper legal advice at the right times. A lawyer who honestly tries to help humanity is a real servant of the community.

**The Physician.**—The human body is a very complex organism. There are hundreds of parts and organs to it. When these are all working well, we forget all about them. But when some part of the body does not do its work properly for some reason or other, we like to have somebody around who has made a study of the body and its diseases, and who can tell us what to do to restore health. Such a person is called a physician. A good physician once said that if every doctor did his duty, there would be nothing more for doctors to do. By this he meant that it is the duty of the physician not only to restore us to health when we are ill, but to take care of us in such a way that we seldom become ill.

**Qualities of a Good Physician.**—Medicine is one of the professions calling for special powers on the part of the learner. If a boy has not these powers, he should choose some other profession or occupation. Selfish people make poor doctors. In this profession you will be working to serve humanity rather than yourself. If your attention is directed too much toward yourself, you will not succeed. The doctor who discovers a new treatment or a new remedy does not patent the process. He gives it freely to the world without any other reward than the feeling that he has done something to decrease the illness and suffering of the world.



Invalids make poor doctors. Aside from the fact that they cannot stand the strain of the calls and trips they must make, most people distrust the physician who cannot heal himself. The physician is subjected to irregular hours of sleep, irregular meals, and exposure to all kinds of disease. He must have a rugged health



*Courtesy Bureau of Health, Phila.*

#### THE EYE DISPENSARY

Correcting faulty vision so that school children can see without strain to stand all this. Finally, the doctor must be open-minded, and must make every effort to keep up-to-date in his treatments. New methods are constantly being discovered, the details of which appear in the medical journals. The good physician will keep track of these discoveries as they appear.

**Preparing to Be a Physician.**—It takes a great deal of time and money to prepare for this profession. The best medical colleges require from two to four years of

college work of a student before he enters the medical school. The course here will require three or four additional years of hard work. Following this, at least a year should be spent in some hospital.

Our student is now ready to take the State Medical examination for his license. Even now his troubles are not over. Usually several years must elapse before his practice pays him a living income.

All this is very expensive. If you do not live in a university town you must go away from home for the greater part of your training, which adds considerably to the expense. In the regular colleges a man may earn his way at least in part by working outside of school hours. But the work in the medical school takes about all the student's time.

**Getting Established in the Profession.**—People seem to prefer doctors who have had quite a good deal of experience. This helps to make it difficult for the man who is just beginning. A young physician may accept a position as a company doctor for some corporation which maintains a hospital for its employees. This is excellent experience, as he is called upon to handle all kinds of cases of sickness and accident. A man with this experience will have little difficulty in building up a practice for himself when he is ready to do so. Many young physicians prefer to begin their work in a new locality. It is difficult for his old neighbors to realize that this young fellow is really a skilled physician.

These difficulties are not so great at the present day. If a young man wishes to prepare himself for general

practice, there are hundreds of towns and communities in the United States that are asking for doctors. In some cases it has happened that the community has offered a free house to the doctor who will settle there. Such openings will usually mean the hardest kind of work—traveling through the country-side from case



*Courtesy Bureau of Health, Phila.*

#### 'OPEN-AIR TREATMENT OF WHOOPING COUGH

Preventing the spread of the disease and effecting a rapid cure

to case, holding himself in readiness for night calls, and treating all kinds of cases, both medical and surgical. Most of the graduates of the medical schools seem to prefer some special branch of medical science. When they have qualified themselves for this, they prefer to settle in some large city where they can have the hospitals convenient for their cases. The hours of a

specialist are much more convenient than those of the general practitioner. Or he may specialize in surgery. This has grown to be a wonderful science in the last fifty years. The surgeon, of course, likes to be near a well-equipped hospital. Indeed, he must be.

**The Opportunities in This Profession.**—No other profession affords an equal opportunity to relieve human suffering. It must be a wonderful feature of the physician's work to go into a sick room where the patient is suffering, and to see how the pain grows less as the patient grows stronger. He must take a great pride in seeing people who owe their health and usefulness in the community to him. If he is a surgeon, he may well be proud of the work he has done. He is, in a very real sense, a servant of the community.

The money returns may not be so great, especially in the case of the general practitioner. The specialist and the surgeon, when they have perfected themselves in their profession, may command very high fees. If a man finds some way to treat cases hitherto looked upon as hopeless, people will come to him from all over the world. Such men may become wealthy.

**The Physician and His Work.**—A storekeeper or a manufacturer considers it a necessary part of his occupation to advertise his goods or services. A physician cannot do this, nor can a dentist or a lawyer. It is considered unfair and unwise to do so. In fact, a dentist or a physician who advertises is sometimes called a "quack" and a lawyer who does this is called a "shyster." The physician considers his work as something far more important than himself. Many years ago, a



Greek physician, Hippocrates, wrote what is called the "Oath of Hippocrates." Read a copy of this oath and see how you like the obligations.

**Nursing.** Closely allied to the work of the physician are the duties of the nurse. Both men and women are needed as nurses, and the opportunities are rapidly increasing. Anyone, therefore, who is interested in caring for the sick or in helping to safeguard the health of the community, can be of great value to society, and make a good income as well in serving as a nurse. If you cannot afford the time and money a medical student must spend in training, but have the qualities that a young doctor needs, perhaps nursing is the occupation best adapted to you.

**The Trained Nurse.**—Most of you are familiar with one field of work in which the nurse is engaged. This is the function of caring for the sick, either in a hospital or in a private home. In this branch of nursing, the worker, usually a girl, cares for the patient under the orders of a doctor. Such a nurse is secured either by the recommendation of a physician or of a hospital, or by application to a "registration office" in which she is enrolled.

Formerly these private and hospital nurses were the only ones to follow nursing as an occupation. More recently, new activities for nurses have been developed. Stores, factories, and mills now employ company nurses, just as they employ company doctors. Other nurses work for the schools, visiting homes, and caring for the health of children. Unlike the private nurses, or the company nurses, school nurses are more occupied in



preventing disease than in curing sickness. They show children and parents how to avoid illness through better sanitation, improved waste-disposal methods, proper screens, and other devices. They also advise treatment for cases of illness which do not require a doctor's care.

Very similar to the work of the school nurse is that of the community nurse, employed by the city or the county. Such nurses do not confine themselves to the homes of school children, but they visit invalids anywhere. They go from one home to another, stay for a time each day, and try to make the patient more comfortable by their help.

**How to Prepare.**—Training for nursing is given in nearly all hospitals. Applicants for training are usually required to be high school graduates, although this is not always necessary. Before applicants are finally accepted, they are given a trial for a few months in order to learn whether they have the proper traits of perseverance, strength, cheerfulness, patience, and ability. Students who dislike hard housework, or dirty work, or who shrink at the sight of suffering can thus be weeded out. If, however, the hospital authorities approve of the applicant, then the full training course follows.

The better hospitals give the student nurse a three-year course of study. Home economics, hygiene, and physiology are taught, so that some of the courses in high school make excellent preparation. The student nurse lives at the hospital during her training, and is paid a small amount, usually a little more than is

needed for buying uniforms. Tuition, board, lodging, and laundry are generally given free.

**Occupational Therapist.**—Strictly speaking, the work of the physician and the home nurse may be said to be completed when the patient no longer needs constant care. But he is not fully cured until he is again sound and well. In this interval of "convalescence," patients are usually weak and restless. They worry because they cannot return to their usual activities nor care for their families. Such worry retards their full recovery, and so the new profession of occupational therapy has grown up to remove as much of the worry as is possible.

**Preparing for Occupational Therapy.**—Occupational therapists believe that if the patient is supplied with light hand work suited to his ability, his mind will be more happily occupied, and thus his body will have a better chance to recover. There is, therefore, for high school graduates a two years' course in nursing and in the manual arts, together with instructions regarding methods of advising convalescents. The work requires a high degree of tact and patience, as well as the other traits a general nurse should have.

**The Dentist.**—Most of us think of the dentist merely as a tooth-puller, or as a man who hurts us when he fills our teeth. But we are learning now that he is more than that. The better dentists seldom pull a tooth at all, but spend their time in caring for the teeth. Experts called dental surgeons specialize in extracting teeth, but this is done only as a last resort. We know now that very many illnesses for which we call a doctor are really caused by ill-kept teeth, and that often the proper cure

can be effected by the dentist. Because it is so much easier to prevent illness by safeguarding the teeth than to cure disease, the dentist occupies an extremely important position.

**A Difficult Profession to Start.**—The dentist, like the doctor, cannot advertise, and so it often takes five years or more before he can secure sufficient patients to provide him with a livelihood. Some dentists, therefore, try to bring patients to their offices by wild promises of “painless dentistry” or of cheap service. Such dentists are not recognized by their profession. If the honest dentist hurts you, it is more likely than not to be your own fault for not brushing and cleaning your teeth. The good dentist hurts you because he cannot help it. If he needs to hurt you, and fails to do so, he is not giving you good service, and is not safeguarding your health. The good dentist will charge you more than will the “quack,” but he will take care of your teeth, whereas the “quack” will do a slipshod job and leave you worse off than before.

Only boys and girls of strict honesty ought, therefore, to resolve to study dentistry. The field is broad, and for good workers the financial rewards are high. There is not likely to be the same irregularity of hours as the physician has, but the work is more continuous and perhaps more exacting.

Although the physician can practice as long as he is active, the dentist must stop as soon as his eyesight and nerves fail. For this reason a dentist must make a very good income while he is practicing in order that he may have an income after he retires. The earnings of den-

tists seem large, but when you consider the preparation and the requirements of the profession, together with the expense of keeping up an office, they are not so large, after all.

**Preparing for Dentistry.**—The dentist, like the physician, must have a high school and sometimes a



**A CITY DENTAL CLINIC**

Healthy teeth are so important to children that some cities maintain a free dental service for school children

college training before he enters the special dental college. More money is required of him than of the doctor for starting practice because much expensive equipment is required. Many dentists begin, however, as assistants, working on a salary and commission until such time as they are able to establish offices of

their own. Large corporations also hire company dentists just as they hire physicians and nurses.

Dentistry is still under-supplied with high-grade workers. Twice as many men and women as now are dentists could find sufficient occupation. The type of individual required for dentistry resembles closely the type of person who is needed for the medical profession. The dentist must be thorough, neat, and very skilful.

**Mouth Hygienist.**—The mouth hygienist is usually a woman, who assists the dentist, much as nurses assist doctors. She does such work as cleaning teeth, treating minor diseases of the gums, and giving much needed practical advice. Thus she spares the dentist for more important technical work. The course for dental hygienists consists of one year of study in a dental college and a second year of practical work in a clinic. The clinic corresponds to the year in a hospital required of young doctors. Opportunities for mouth hygienists are numerous and the pay compares favorably with that of the nurse. It is a new profession and as yet there are few trained workers. Hitherto, trained mouth hygienists have easily found employment, either as assistants to dentists or as city employees. In the latter case, they give free care to the mouths of school children in order to prevent the decay of teeth and to safeguard health.

**Pharmacist.**—The pharmacist or druggist coöperates with the doctor and the dentist to keep us in good health. The training is shorter, requiring usually a high school education, two years of special study, and in some states a year or two of practical experience. It is often possible to pay part of the expenses through a school of pharmacy by working in a drug store while studying.

Retail sales of drugs alone are seldom profitable enough to supply a living to the pharmacist. The modern drug store, therefore, has usually added a variety of other services. Soda water, ice cream, candy, cigars, toys, and many other articles are sold.



The druggist must therefore be a good salesman to be a good business man.

Above all else the druggist must be reliable, accurate, and honest. An error in the making of medicine may kill a human being. Drugs of inferior quality may fail to cure, even if they do not bring death. Long hours are required of the druggist, for the drug store must remain open well into the night. There is little opportunity for exercise or recreation. However, there are many opportunities for public service.

**Bacteriologist.**—Much of the science of medicine depends upon a knowledge of bacteriology. All of you are aware that very many diseases are due to germs which invade the human body. Bacteriology seeks to discover and to attack these germs. The worker skilled in bacteriology is of assistance to the physician, for he can test water, milk, or human blood for signs of germs. Thus the bacteriologist often knows what disease afflicts the sufferer, and can tell the doctor how to cure it. He is especially valued at a time when very many cases of the same disease are prevalent, for by his investigations the bacteriologist can show the common cause of all the sickness.

Very often, disease is due to supplies of milk or water which have been infected by germs. Bacteriology will show the origin of that infection so that the spread of disease may easily be checked. Disposal of garbage and of sewage are supervised by such a specialist. Pools of stagnant water, unclean streets, or food left unprotected against flies are also analyzed by the bacteriologist, and changes recommended. The impor-

tance of this work is being recognized more and more. In some branches of industry, as in the textile trades, bacteriologists are employed to study and to suggest means to control the organisms which rot the product. Jute fibres are especially liable to such rot, and the jute mills regularly employ these specialists. Manufacturers of cheese and grape-growers consult the bacteriologist for means and methods of maintaining the high standard of their products. Every large city needs a trained bacteriologist connected with the Board of Health to supervise the water supply and to test samples of milk and of other foods.

**Training Required.**—For the person who wishes to qualify as a bacteriologist a college education is necessary. Many bacteriologists have spent several additional years studying and working as assistants before practising their profession.

The boy or girl who cannot go to college can serve an apprenticeship in a laboratory and become what is known as a laboratory assistant. To such a worker is generally given analysis that can be handled by one who knows the different steps to take. The laboratory assistant is fairly well paid, but unless he is willing to study outside of working hours, there is little chance for advancement.

**Physical Director.**—It was an old-fashioned idea that people didn't need to think of their health until they felt sick. This, of course, is wrong. The time to think of health is while you are well.

If a person is sick it may be necessary to call a doctor and to take medicine, but it is far better to keep well

by taking proper exercise. It is just as bad to take the wrong kind of exercise as it is to take no exercise at all. The need for men who were entirely physically fit during the World War called our attention to the great need for training, because less than one-third of our young men were physically perfect. We need to be fit in war time, but we need to keep well even in times of



*Courtesy The Y. M. C. A., Philadelphia*

#### A PHYSICAL CULTURE CLASS

There is a good demand for teachers in all branches of athletics

peace. The mother should be well in order to make the home a happy place. Each child should be well in order to grow to healthy manhood and womanhood. As a means of promoting better health many schools are employing physical directors, and are requiring all pupils to take physical training either in well-equipped gymnasiums or in the open air. Some big manufacturing industries and department stores

provide gymnasiums and physical directors for their employees.

There is a growing demand for well educated physical directors, both men and women. To satisfy the demand there are many special schools and colleges for training these directors. The salaries are good and those who are engaged in this work have the satisfaction of knowing that their work has a health value second in importance only to that of the doctors and nurses.

**Social Worker.**—The social worker teaches others to take better care of themselves. Some people think of a social worker only as a rich young society girl who visits a poor family and leaves a basket of food and clothing and money to pay the rent. Think of what you would want, if you were in poverty. You would undoubtedly prefer to be provided with a way to take care of yourself. If there is a poor family that needs food, clothing, and rent money, the social worker begins by finding out the cause of the family's condition. Perhaps the father is sick and out of a job. In that case the social worker might supply food and clothing and rent money for a very short time. Her real work, however, would be to help the father to get well again. He might need hospital care, or he might be treated in his own home until he becomes strong enough to work. The social worker will then help him find a job in which he can support himself and his family, and perhaps later visit the family to learn if any other help is needed.

Social workers are trained in high school and college. Some have taken special courses at schools for social

work. They are employed both by public and by private agencies, and are active not only in cases of disease and poverty, but also in the prevention or cure of youthful criminals, or defective individuals, and the care of orphans. Not all of them visit homes, like the one whose work we have been describing, for many of them are engaged in writing, speaking, raising money, or directing charitable agencies.

**The Librarian.**—Many persons who like to read choose to be librarians so that they can spend their time among books. In large libraries, however, the librarian has so many duties to perform that she seldom has time during working hours to look inside the interesting books that pass through her hands. It is very pleasant for such a person, however, to work among books, and to meet folks who like to read.

**What a Librarian Should Be.**—The librarian needs many of the traits of a teacher. The marking up of borrowed books is only a small portion of her task. A good librarian must be able to conduct story hours for small children, prepare bulletin-board exhibitions of interesting news items concerning books and events, choose suitable books for people of varied tastes, and answer questions covering a vast range of interests. Thus she must be a person of wide information: she must have great patience, and she must possess a very pleasing personality. She must not shrink from detailed tasks, for it will be necessary for her to maintain a catalogue of her books and to keep close supervision over the books that have been borrowed. She must supervise the return of books that have been kept out too long



and must keep a list of books whose purchase has been recommended.

**How to Prepare for Library Work.**—Training for the best library position should include high school and college education, and a special course of at least two



*Courtesy St. Louis Public Library*

THE REFERENCE ROOM OF A GREAT PUBLIC LIBRARY

A wealth of knowledge is available to those who know how to use a library

years in a library school. In order to be admitted to some library schools it is necessary to be able to read at least two foreign languages. Graduates of these schools become the chief librarians of the largest city and college libraries.

Minor positions in the libraries can be filled by girls with less preparation. It is possible to start as a library

apprentice and learn the duties of the occupation by actual work in the library. This training, however, does not fit for the best positions and the pay for such a worker generally remains low.

**Newspaper Work.**—Those who like to write often find newspaper work fascinating. But you must have more than merely a desire to write, because a wide range of information is essential. This is best secured by high school and college training followed by a special course in a school of journalism. As with the librarian, you can work up from the bottom, but you are more likely to succeed if your training is extensive.

**Qualities Needed.**—Accurate observation and quick thinking are essential to a good reporter. The newspaper must have information in a hurry, and it must be correct. The reporter's value to his paper depends upon speed and reliability. Speed in writing is also necessary, for it is essential that no time be wasted in getting information into compact form for printing.

Many people will tell you that shorthand is needed by a newspaper man. Formerly this may have been true, but it is now unnecessary. Important speeches will be typed in advance, and copies will be given to the "press," or, if not typed ahead of time, the speech will be taken down by some stenographer hired for the occasion, and typed for the reporters while the meeting is in session. Such typewritten speeches are called "canned copy" by the newspaper men. No meeting of importance within recent years has failed to prepare "canned copy."

Reporters do not need shorthand, but they must

know typewriting, for all the articles for the paper are typed.

Salaries of reporters are fairly good, but the hours are uncertain and irregular. Workers on a morning newspaper are supposed to work from one o'clock in



THE CITY ROOM IN A NEWSPAPER OFFICE

Here the reporters come to write the local news under the direction of the City Editor

the afternoon to midnight, but the time may be extended. The reporter has no quitting hour until the event that he is reporting is finished. Evening paper men and women work from seven in the morning until six o'clock at night or later.

The inconvenience of long hours is somewhat counter-balanced by interesting experiences and by the impor-

tant people whom the good reporter will meet. He will possibly be sent to every section of the country, or even to foreign lands. He may get to know the leading men and women of the community and to enjoy their confidence. Such a reporter necessarily possesses good manners, charm of personality, and above all, loyalty to his paper and to his friends. The reporter who proves faithless cannot long succeed.

The boy or the girl who complains of overwork or who asks unnecessary questions is not well fitted for reporting. When Henry M. Stanley was ordered by his newspaper to discover what had become of the explorer Livingstone, who was missing in Africa, his only orders were "Find Livingstone." The methods to pursue and the place to search were left to Stanley to discover. In newspaper work, self-reliance and initiative are exceedingly desirable traits.

As in other professions, the newspaper field opens up great possibilities for advancement. There is always employment for experts in sports, books, music, drama, "society," or crime. Many writers of short stories are, or have been, newspapermen. There is also opportunity for public service in newspaper work. Reporters often assist in detecting crime and in calling attention to such evils as insanitary drainage or poor streets. Editors do much for readers by exposing fake stock promotions and other get-rich-quick schemes.

Other reporters enter into advertising work, where pay is very high for workers of ability. Still others become "press-agents" or publicity men, whose task it is to give favorable "write-ups" of the man or asso-

ciation which employs them. Publicity work is an ever-increasing field where salaries are very high indeed. Many prominent men and women and corporations now have publicity agents although they may not be called by that name.

Newspaper work, editing, advertising, and publicity work are open to women on exactly the same footing as they are to men. Successful women workers in these occupations are very numerous indeed.

Practice in newspaper work may be obtained by the student while still in school. The school paper offers opportunity. An even better method is to act as high-school correspondent for the daily paper. News of athletic contests is especially desired by the local editor, and writing news for him is good training for a career in journalism.

**Entertaining as a Profession.**—Many people choose to earn their living entertaining others. They may do this as actors, musicians, or dancers. It is not possible to succeed in these professions through natural talent only; real intelligence and a good education are necessary, and after that a willingness to begin in a small way and work up.

These artistic occupations, and particularly motion picture acting, sometimes exert a powerful attraction upon girls and boys. Because they have been told that they can act in amateur theatricals or that they are good looking, they are convinced that they can immediately become "star" actors.

Nothing could be farther from the truth. Long years of hard work in poorly-paid parts precede success upon



the stage or screen unless you have extremely remarkable talent. Do not be misled by the so-called "biographies" of movie actresses printed in the moving picture magazines. You will remember that the occupation of publicity worker has been mentioned. Nearly every "biography" is written by such a writer and not by the person whose name is signed. Such false articles lead many boys and girls to run off to Hollywood only to find that they have been misled. Less than one arrival in a hundred "makes good" in the movies. The rest return home to try something else.

If you believe that you can act, or dance, or sing, it is far better to seek advice from a musician in your home town, or, after you have secured the approval of your parents and your teachers, from the manager of your local theater. If you have unusual ability, you can rest assured that they will bring you to the notice of the leaders of the profession that you seek to enter. If they do not approve, then you had better abandon your ambitions, for these people know their business far more thoroughly than you do.

**The Fine Arts.**—Some people think that it is not possible to become an artist unless you have been born with great artistic talent.

The inclination to do some kind of art work is, of course, necessary for a beginning, but persistent practice and proper education are essential. Some people say, "I can't draw and I can never learn to draw," but some of these same people know that it is possible for them to learn to write legibly. Think how much writing you are required to do every day, and how little drawing.

You might learn to draw well if you had as much practice in drawing as you have in writing. Few art workers become great painters or great sculptors. To succeed in these "fine arts" it is necessary to have exceptional talent, to practice very hard and to get a good general education. Then, the painter and the sculptor ought to spend many years in studying art, either at some good art school in this country or in Europe.

**Commercial Art.**—There are many other ways to earn your living at art work, particularly in what is called "Commercial Art." Less native talent is needed, and a shorter course in art school, but good general education is still necessary. The money rewards are usually good, but they depend, of course, upon your personal skill and business ability.

Among the most enjoyable vocations is cartooning. Success in this work requires skill and originality. You may be able to copy accurately, but this is not enough. Good salaries are paid only to those who can think up original ideas, either to illustrate news items, or as "comic strips." If you have clever ideas, a sense of humor, and ability to draw, cartooning may offer you an opportunity. You may begin by drawing for your school paper, or for the local daily. The pupil should be careful, however, not to place too much confidence in the "schools" that offer to make him a trained cartoonist. Few real cartoonists ever heard of them.

Another very profitable and enjoyable vocation is designing. Styles for dresses are designed before the clothes are made. Materials are designed before they

are woven. Patterns for jewelry, rugs, wall paper, and furniture are also worked out by designers.

An illustrator draws or paints pictures to advertise an article or to represent some part of a story. When you read books or magazines, you often enjoy the advertising section and the pictures as much as you do the stories. This indicates the illustrator's skilfulness. The attractive cover design is also the work of a well-paid illustrator.

There is a demand for people who can letter in an artistic manner. Stores need men to letter price cards or advertising posters. Advertising agencies want letterers to make headings for booklets. Many Christmas, New Year's, and other holiday cards are hand lettered.

**The Photographer.**—Photography is partly art work and partly mechanical work. It is artistic because the photographer must be able to make pictures as attractive as possible, and it is mechanical because of the technical processes which are involved. There are good schools in photography, but many photographers learn by working for others until they can start their own business. A good general preparation includes a high school education, giving special attention to chemistry. A successful photographer should be cheerful and pleasant and know how to entertain different kinds of people, so that their pictures will not seem strained and unnatural.

Women photographers are apt to be especially skilful in taking children's pictures. This is a good business because all mothers want their babies' pictures. Some

photographers build up business by taking photographs of people in their own homes. These pictures are usually more prized than are commercial pictures taken in a strange studio.

Other branches of photography include newspaper and motion picture work, in which the photographer must have many characteristics similar to those of a reporter. Some photographers specialize upon photographs for use in selling and advertising. Practically all furniture, machinery, and hardware are sold by means of photographs.

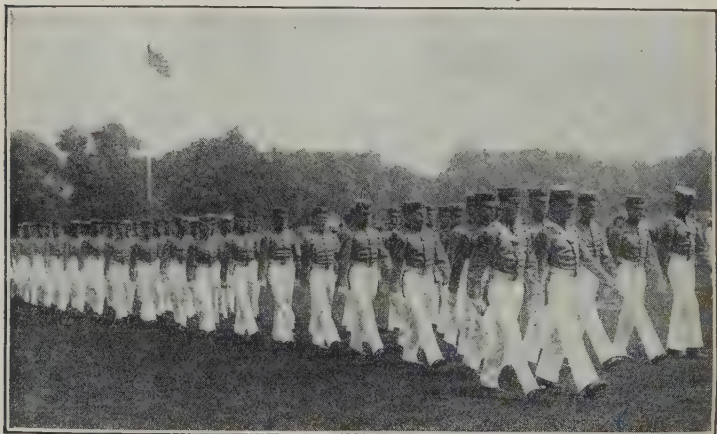
**The Architect.**—Most of the small homes in your community have been planned by the men who built them. You will find that the larger homes and the public buildings have generally been planned by architects. The architect first makes a plan and writes the specifications, which are directions as to how the building shall be erected and what materials are to be used. As the building progresses, he visits it occasionally to see that the work is being done properly.

In the large cities architects usually specialize. Some will design homes, while others will design churches, or school buildings, or factories. Closely allied to the work of these is that of the landscape architect. He plans the ground for large estates or parks. This generally includes grading, laying out drives, and planting with trees and shrubbery. In seacoast cities we find naval architects, or architects who plan ships.

**Preparation.**—Since the architect must have the qualities of an artist, a skilled draftsman, and a business man, a broad education is necessary. A high school

graduate can enter a school of architecture and take a four-year course. If he has the means he can follow this preparation with study abroad. Later he should work for a successful architect until he is ready to establish himself.

Many boys, who have artistic ability and who like



© Keystone View Co., Inc..

#### DRESS PARADE AT WEST POINT

Cadets learn to command soldiers not only by successfully passing through a difficult course of study but by living the life of a soldier

to draw, find opportunities in this profession by working in architects' offices. By serving an apprenticeship they are able to become architectural draftsmen. The boy who is willing to study at night can usually prepare himself to become a designer.

**The Army.**—One of the duties assigned to the Federal Government by the Constitution is that of "providing for the common defense." In order to carry out this obligation the Government has established a military



school at West Point in which young men learn the profession of arms. This profession has always been considered an honorable one. Perhaps some day we shall be able to do away with war entirely, but until that happy day comes, it will be the duty of the Government to have a body of men ready to take charge of the troops.

**Preparation.**—The young man who is planning to enter this profession should be a good student. The course of study at West Point is very hard. Many young men are dropped from the school each year because they find themselves unable to meet the exacting requirements of the teachers. If the young man can finish the course and graduate, he is given a commission as second lieutenant in the regular army. From this time on his promotion is gradual but reasonably sure. Of course, if a war should come, promotion may be much more rapid.

**Qualities Needed.**—The first quality that occurs to anyone who thinks of this profession is that of courage. Our young officer must have this quality in a high degree. Our West Point men have a splendid reputation along this line. Then the man who wishes to be an officer should have qualities of leadership. Whether he commands a fourth of a company or an army division, he must be able to inspire the confidence of the men and the officers under him. In the next place, he should be willing to coöperate with others. The man who cannot obey orders absolutely makes a poor commander.

**The Opportunities.**—The money rewards of this

profession are not high. The salary enables a man to live comfortably. But we must take into consideration the fact that when he arrives at the age of retirement, he need never fear want. The Government allows him a retirement income which is ample for his expenses. So he can manage with a smaller income, because he does not need to save up for his old age.

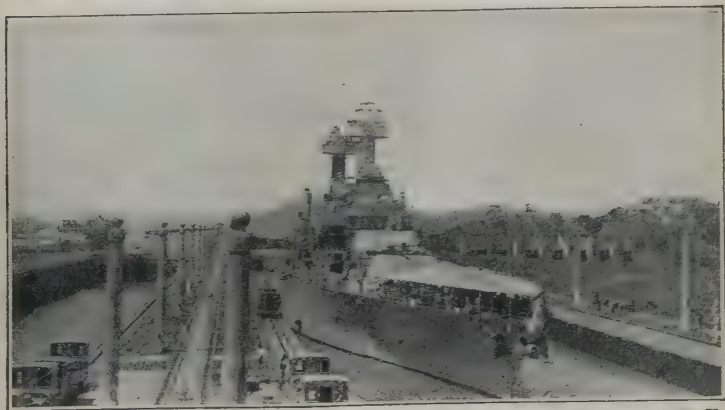
The opportunities for service are many. In time of war he stands between the enemy and the people he serves. It has frequently happened that the soldier has been honored with high political office after he has bravely fought through a war. Washington, Jackson, William Henry Harrison, Taylor, Grant, Garfield, and Roosevelt were all soldiers who reached the White House. Many others have been governors of their states.

Even in peace time the army serves the people well. Any great engineering enterprise undertaken by the Government is usually carried to completion by the officers of the engineering corps of the army. Dredging rivers, building breakwaters and other harbor construction, and especially constructing the Panama Canal are all achievements to be credited to the army.

**The Navy.**—Continuing its policy of “providing for the common defense” the Federal Government has also established a navy. It has also provided a school at Annapolis, Maryland, to train officers for the navy. The American navy has splendid traditions. What American boy is not thrilled when he hears of Paul Jones, Stephen Decatur, Admiral Farragut, or Admiral Dewey? In some respects service in the navy is thought

to be more desirable than in the army. Our ships are constantly moving from place to place. The officers and the men have opportunities for seeing many parts of the world.

**Training.**—The course of training at Annapolis is fully as rigid and difficult as that at West Point. A



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#### THE BATTLESHIP "MARYLAND" IN THE PANAMA CANAL

The crew of a naval ship contains experts in many different kinds of work. Many young men enlist to learn in the navy schools trades in which they can make a good living in civil life

boy, to be admitted to either school, must receive the appointment from the Congressman from his district, or from one of the United States Senators from his state. The President appoints a few, but these appointments are usually reserved for the sons of older officers. Some appointments are granted after a competitive examination. The Congressman need not conduct such an examination, however, unless he so desires. For either school a strong and vigorous

body is necessary. The other qualities are about the same for the navy as for the army.

**The Opportunities of the Naval Officer.**—The money returns for a navy officer are about the same as those of an army officer of equivalent rank. Many business houses are anxious to get men from the navy to command merchant ships. If a young man does not care to remain after several years' service, he can always find very profitable employment in private life. In fact, just before the war, there was some complaint that too many of the Annapolis men were leaving the navy for the greater rewards of private life. But in the service itself there are many chances for advancement. Promotion is slow, but a man even in peace time may look forward to a responsible command before he retires. The retirement allowance is similar to that given to retired army officers.

### THINGS FOR PUPILS TO DO

#### Questions for discussion in class.

What are the qualities you would want in your physician? Do you have any of these qualities?

Why is strict obedience one of the necessary qualifications for a nurse? Why is cheerfulness?

Are there men trained nurses? Why is it a good occupation for boys who would like to study medicine, but who cannot afford the time or money to prepare?

Tell some of your experiences with very little children in which you have acted the part of Occupational Therapist to them.

In what kind of dental work do you think women dentists would be more successful than men?

Should a woman try to dress and look as nearly as possible like a man if she wishes to be a doctor or a dentist?

How often do you clean your teeth? How many times a year do you go to the dentist's? Why should you go when you do not have a toothache?

If you have ever visited a hospital, describe the different tasks you have seen being performed.

What are the chief things you noticed about the hospital which makes it different from a home?

How can you assist the doctor? the dentist?

Is it better for a doctor or a dentist to teach you how to keep well, or to cure you after you get sick?

What exercises have you that are valuable for your health?

What is the advantage of being a physical director over that of being a stenographer?

If you were a cripple and left alone in the world at the age of 13, what would you want a social worker to do for you?

What natural qualifications would you want in a lawyer if you were to hire one to protect your life or your property?

#### Problems to be studied outside of class.

Ask your doctor what medical journals he subscribes to. Ask him what sort of information he gets from them.

Visit a drug store and list the different kinds of articles for sale.

Has your community ever had an epidemic of any disease? What did the bacteriologist do to relieve you?

Are there any people in your community unable to support themselves? If you were a social worker what would you do for them?

The Russian government was for many years one of the most autocratic in the world. Show how this kind of government was natural in a land where there were no free public schools.

What would happen to our government if the children who could attend expensive private schools were the only ones educated?

Ask some older educated person to tell you the influence his teachers had upon him.

Show how the work of the teacher and the minister are similar.



What educational requirements are there to teach in your school?

Ask a lawyer to tell you the different kinds of work he has to do besides pleading cases in court. Make a list of all these.

Visit a library and list the kinds of work your librarian does.

Bring to class a newspaper clipping which interests you. Write up some school events in newspaper style.

How is the reporter also an educator?

Show the connection between good roads or street car service and education.

### BOOKS FOR PUPILS TO READ

#### Fiction and Stories.

JAN OF THE WINDMILL.—*Mrs. Juliana H. Ewing*. A miller's son who became a famous painter.

GENTLEMAN FROM INDIANA.—*Booth Tarkington*. A country newspaper man who became a leader in his community and was elected to Congress.

#### Other Books.

THE IDEAL TEACHER.—*George H. Palmer*. Sets forth in language easily understood the point of view and the qualities of a good teacher.

YALE TALKS.—*A. Brown*. The conduct of young men. Should be read by anyone who aspires to religious leadership.

WHAT CAN A YOUNG MAN DO?—*Frank West Rollins*. Various chapters deal with different professions. Chapter IV, doctor; V, law; VIII, teaching; XXI, newspaper work; XXII, dentist.

CAREERS FOR WOMEN.—*Catharine Fliene*. Pages 273 to 292, women in law; 427 to 429, 473, women in pharmacy; other chapters deal with other professions for women.

STARTING IN LIFE.—*Nathaniel C. Fowler*. Note pages 104 to 118 dealing with the study of law. Other important chapters.

MEDICINE AS A PROFESSION.—*Weaver and Wearer*.

TRAINING AND REWARDS OF A PHYSICIAN.—*R. C. Cabot*.

TRAINING FOR THE NEWSPAPER TRADE.—*D. C. Seitz*.

NEW SCHOOLS FOR OLD.—*Evelyn Dewey*. In which the teacher is asked to see his job in its full possibilities.

INDIA A PROBLEM. *Wilbur Brenner Stover*. A book for young people planning to enter the mission field in India.

BEING A GOOD TEACHER. — *Henry C. Krebs*.

FOR THE WORK OF THE MINISTRY. — *Basil Harwood*.

THE YOUNG MAN AND TEACHING. — *Henry Parke Wright*.

THE HISTORY OF JOURNALISM IN THE UNITED STATES. — *George Henry Payne*. Famous editors.

CAREERS. — Pages 59 and 60 tell about women as dentists. *Woman's Employment Publishing Co.*

## CHAPTER XVI

### CLERICAL OCCUPATIONS

**What Is Meant by Clerical Occupations.**—In the language of the working world there are a number of occupations known to the workers as "white collar jobs."



*Courtesy of Western Union*

#### **THE TELEGRAPH MESSENGER**

Boys receive intensive training in business methods, personal appearance, and conduct in the schools of the company, and their experience gives them a broad view of business in general.

The men who work at the occupations that go by this name do not actually handle the materials which later appear as articles of food or clothing, nor do they actually lay up brick or stone walls, drive engines, or navigate ships. But all the workers' trades need several other conditions present

in order to run smoothly. Letters must be written, accounts kept, insurance written, money cared for, advertisements prepared and edited, and various other services performed if business is to run easily and

properly. These are the tasks of the "white collar men."

**History of the White Collar Job.**—There are several curious ideas still lingering in the heads of many people—ideas that go back to the Middle Ages—about the kind of work a "gentleman" can do or cannot do. At that time, the art of writing was as yet a mystery to nine persons out of every ten. For this reason, any task which required writing might be done without losing one's position in the respect of his neighbors. But the tasks that required skill and muscle could be done by any base-born churl, never by a gentleman. Because there is a remnant of this idea prevailing in the minds of many people, too many young persons starting out in life want to enter the ranks of the White Collars. Boys coming out of high school often think that it is beneath their precious dignity to become apprentices. They are in a hurry to appear successful and prosperous, and they think one of the symbols of prosperity is the white collar. It is nearly time to get rid of some of these ideas, and see things in their true proportions.

**Some of the Clerical Occupations.**—In exchanging goods and service there must be some way devised by which people can estimate the values of one kind of goods or service in comparison with others. This necessity led to the invention of money. And because the process of exchange may be a very roundabout one, records of all transactions must be kept in terms of money. Then, money itself must be kept on hand for use in business. People who earn more than they

need wish to save up some of their earnings for use at some time in the future. People who are actually producing may not have all the money they need to carry on their work until they can exchange their products. There must be places where savings can be safely placed and to which business men can go for loans. To carry on any business, a great many letters must be sent and received. These letters must be written, copied, and filed so that they can be referred to later. There is the constant danger from fire, storm, or shipwreck. Such a loss might force a man out of business. But by making small payments from time to time, he can arrange to have a sum paid to him if such a disaster should overtake him. A careful account must be kept of all such payments and losses. Other work of a clerical nature can be found in libraries, newspaper offices, law offices, and in real estate offices. A few of these occupations have been discussed in preceding chapters. We will now study a few more.

**The Bookkeeper.**—It is the work of the bookkeeper to make a record of all transactions in a business. When people buy from the store or factory, when they sell, when money is received or paid out, when funds are borrowed or paid back, when work is done and the workmen paid—when any of these things are done, records must be made so that the bookkeeper can at any time tell just how the business stands. He must be able to tell his employers whether they are gaining or losing money. Formerly the entire equipment for this work consisted of about three blank books, a couple of pens, and a bottle of red ink and another of black.



But in the large offices today we find many devices used to speed up the work of the bookkeeper. There are adding machines, tabulating machines, check-writing machines, loose-leaf record books, and other devices to enable one person to do much more work than was possible a few years ago.

The boy or girl who is learning to be a good bookkeeper should have as thorough an education as can be managed. The better the training, the farther he will go in the line of promotion. He should have at least a full high school course, and



*Courtesy Burroughs Adding Machine Co.*

#### A BOOKKEEPING MACHINE

Devices such as this one, which prints and adds totals, have taken much of the drudgery out of accounting work

if he does not follow the commercial curriculum, he should take a thorough special training in some commercial school. The principles of bookkeeping are not difficult, but accuracy and thoroughness are absolutely necessary. The work is very confining. The bookkeeper must work in an office with little chance to move around in the fresh air. But there are many opportunities for promotion. If he studies hard and learns all that there is to learn, he will be able to take a position as bank-examiner,

either with the state or with the Federal Government. If he familiarizes himself with the work of the store or the factory he may qualify himself for the highly paid position of cost accountant. There are firms of Certified Public Accountants which are constantly on the lookout for bright, well-trained young men who can enter their service and help them straighten out the books which are in their charge. Efficiency engineers must have a thorough grounding in bookkeeping.

**Purchasing Agent.**—The purchasing agent is the man in charge of all the goods bought for use in the business. Machinery, supplies, and raw material, as they are needed, are obtained by this department. The man in charge should have a thorough knowledge of prices, quality, possibilities of shipment, etc. A boy who is looking forward to work of this kind must make himself familiar with the goods needed, the quantities needed, and the prices. It is really not a position to which young people have a right. The work requires long experience. You have already studied about buyers in the chapter on "Commerce."

**Shorthand and Typewriting.**—A man who does a great deal of business does not have the time to write all his own letters. It may be necessary to send out several hundred letters a day. Lawyers who have important papers to draw up cannot possibly find time to do the actual writing themselves. About a hundred years ago a system of writing was invented in which very simple lines and curves are used to represent various sounds. A person who is familiar with one of these systems can write as fast as an ordinary man

talks. So business men employ persons who have this art, and dictate their papers instead of trying to write them out. When the dictation is finished, the shorthand writer takes her notes and writes out the letters



*Courtesy Ediphone Agency, Philadelphia*

### THE TYPIST

Knowledge of stenography is not necessary in transcribing letters from the dictating machine

in full on a typewriter. Or the art of rapid writing on a typewriter may be learned without acquiring the art of shorthand. Many large houses have phonographs into which the letters are spoken by the executives. The letters are then transcribed on the typewriter, the operator placing the sound-tubes from the phonograph on her ears.

**Learning the Arts of Shorthand and Typewriting.**— These two occupations are carried on largely by girls. That does not mean that a young man should not learn them. Mr. George Cortelyou, a member of President Roosevelt's cabinet, started out as an expert shorthand writer. So have hundreds of others who have attained



*Courtesy Strayer's Business College, Philadelphia*

#### A BUSINESS COLLEGE CLASS IN TYPEWRITING

The touch system taught in such schools soon develops great speed on the machine

the highest positions in business. The learner should study all the English she can. She should especially master spelling and punctuation. She should know grammar and sentence-construction so thoroughly that their correct application have become habits with her.

The learner must then take her special training in some good commercial school. If her work in the school is satisfactory, there will be little trouble about getting a place, since business men who need help of

this kind are in the habit of going to the principal of the school for it.

When entering an office as an employee, her first care should be to find out what kind of words she will be obliged to use in her daily tasks. A chemical manufacturer, a civil engineer, and a lawyer will require entirely different vocabularies.

**Opportunities of the Shorthand Writer.**—A person, whether man or woman, who is quick and accurate at this work, and who has the ability and the ambition to work up, need not feel that this is a “blind alley” job. A shorthand writer who is promoted to the position of private secretary to some great business man or banker meets the industrial leaders of the community and becomes acquainted with them. He has the opportunity of learning the details of big business so that in the years to come, if he wants to go into business for himself, he has a wonderful training.

**Court Stenographer.**—Every court of justice in the country except that of a Justice of the Peace is required by law to keep a full record of all the business transacted in the Court. For the purpose of securing a complete record, a person skilled in shorthand writing is required to write down the testimony of witnesses, the questions of the attorneys, the charge of the Judge, and everything else pertaining to the case. Such a person is known as a court stenographer. The requirements are: First, that he must be absolutely accurate in his notes; second, that his vocabulary must be very extensive, since all kinds of cases come up for decision; third, that he must have some knowledge of the law



and of court procedure. Sometimes a court is so busy that the stenographer has no time to transcribe his notes. In that case he simply dictates the notes into a phonograph and a staff of transcribers type them at



*Photo, Logan Howard-Smith*

#### THE STENOGRAPHER

Taking dictation in shorthand

their leisure. It often happens that a court stenographer studies law and after a few years is admitted to the bar. His wide experience in the courts is likely to prove very helpful in building up a practice.

**Filing Clerk.**—In a small office, the stenographer usually files the letters received, together with a copy of the answer sent, as soon as her work of transcribing

is finished for the day. In a large office, however, where there are several typists at work, a special filing clerk is needed. It is necessary to have the files kept accurately and completely. It is frequently necessary to refer to letters sent previously. Sometimes the letters are needed in court to prove that certain transactions took place. A boy or a girl who is obliged to enter an office without having had the chance to attend commercial school can nevertheless learn filing very easily. If the boy or girl is quick and studious, he or she can be earning something in this way, while attendance at the night classes in school will fit him or her for some better position in the office.

**Office Manager.**—A large business office, with a number of typists, bookkeepers, and filing clerks, needs some supervision in order to run smoothly. For this reason one of the most experienced of the clerks is selected as office manager. He may have been a bookkeeper or one of the stenographers. It is his duty to see that the office equipment is up to date, that the necessary number of clerks is on duty, that the files are in such shape as will make it easy to refer to them, and that there is on hand the proper quantity of supplies. The position is one of responsibility. The boy who enters office work may look forward to this as one of the opportunities for promotion.

**Public Stenographer.**—In a large office building there are usually men whose business is so small that they cannot afford a clerk for themselves. In the large hotels there are often traveling men who want to have letters written. At these places, then, a good stenog-

rapher can open an office, making it her business to write these letters and any other papers that her customers may wish. This is a very good chance for a quick, accurate girl. Her business may grow to such an extent that she may be required to employ quite a staff of girls to do all the work offered. This is another opportunity for the trained girl to get into business for herself.

**Statistician.**—There is a constant demand on the part of business men for all kinds of information relative to general conditions that might affect their business. In a large office, a man may be employed whose duties are to collect this information and arrange it in ways that will make it useful to the executives of the concern. This work requires special training at some university, since the making of the various lists and tables is a real science in itself. Several firms are in existence whose whole time is devoted to gathering and tabulating information of all kinds. Firms all over the country subscribe to this service and receive weekly reports along the lines they have asked for information. This work is just beginning. There is plenty of room for the young man or young woman who wishes to enter this field.

**Insurance.**—The modern business world does not like to take too many chances about things which cannot be helped. So a system of contributions has been worked out by means of which a man, by making small payments from time to time, helps to build up a fund from which these losses can be paid. If a man's buildings burn down, or if they are destroyed by a storm, or

if his ships are wrecked, the property loss does not fall so heavily on him. There is also insurance against personal accident, and many men have taken out insurance so that in case they die a large sum is paid either to the family or to the business which might suffer from the loss of their services. This business is a very interesting one for young men to take up. To enter this occupation, he should have a good general education to start with, since he is obliged to meet all kinds of men. He should then study with great thoroughness the various kinds of insurance. He should study carefully the business and property of the persons he desires to meet. When he finally takes up the matter with the prospective customer, he should be in a position to give expert advice. Too many young insurance solicitors try to write up the business that pays them best. It is much better in the long run to write up the business most needed and most useful to the customer. There are wonderful opportunities in this occupation for the young man who can meet people, who can talk convincingly, and who can keep



*Photo. Logan Howard-Smith*

#### THE SMALL HOUSE

Insurance on a number of houses of this sort distributes the loss in case one burns



the point of view of selling service to the public rather than of getting as much for himself as possible.

**Other Clerical Positions.**—It is impossible to make a full list of all the possible clerical positions. In addition to those we have already studied, it might be well to review what a librarian has to do. This is one of the occupations in which girls are found in large numbers. The librarian should be a person who loves books. In addition, she must be specially trained not only in the routine tasks of the library, indexing, filing, classifying, but she should be a woman with ideas as to how a library can serve the community. The work of the librarian has already been referred to in Chapter XV. In the newspaper and publishing field there are a number of clerical positions open to both boys and girls. It is interesting to observe a proofreader. He must be a thorough master of grammar, spelling, and punctuation. He takes the "proofs" and goes over them with the most exact attention. There are special marks which he uses to indicate the various errors which he finds. The compositor takes these revised proofs and from them corrects the type he has set up.

**General Opportunities in the Clerical Occupations.**—To sum up, the clerical occupations offer two types of chances for the boy or girl. The one who has no particular ambition, and who has little energy, can find a quiet corner in one of these occupations in which he can spend many years. Or if he is a man of outstanding ability and driving energy, one of the clerical occupations may open chances for him to make a large fortune and become an important figure in the business



world. Girls have been accused of entering these occupations merely to earn a few dollars for clothes, and to pass profitably a few years until they can start to make homes of their own. Perhaps this is true in many cases. Yet the business world is very much more willing to promote women to good positions than it was a few years ago. There is no reason why a girl should not work up to something well worth while when she decides to enter the clerical occupations. Of course the same thing is true in the clerical professions that is true in any other occupations. If a boy or a girl possesses energy, initiative, and perseverance, the possibilities for promotion are very great. But if these qualities are weak, one can easily get into a rut—more easily in the clerical occupations than anywhere else. The disadvantage, then, of being in a clerical occupation consists in the fact that a blind alley job of this group is much more poorly paid than blind alley jobs in other fields of work.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

Do you keep a record of all the money you receive, and of all you pay out? Why would this be a good thing to do?

Consider carefully what kinds of protection by insurance would be best for a farmer, a miller, a storekeeper, a lawyer.

Discuss some of the things the town library might do to become more useful to the community.

Imagine all the banks obliged to shut their doors and call in all their loans. What would happen to the owners of stores and the owners of factories in the town? Discuss various ways in which a bank helps a town.

Problems to be studied outside of class.

Find out from some bookkeeper why he chose this work, how he likes it, and what promotion he can reasonably expect. Would such prospects satisfy you?

If you live in a county-seat, try to get acquainted with the court stenographer. Is his work hard? Does he like it? What parts does he like best, and what parts are most disagreeable?

Ask a local banker how much his bank has grown in the last five years. Are most of the loans to farmers, or to business men in the town?

If your father is a farmer, try to calculate how much a bale of cotton, a bushel of wheat, or any other unit of production, costs. Allow for the land, the machinery, rent, wear, labor, and storage. Do you think you would like to be a cost accountant?

Are there any public stenographers in your town? Ask one of them what the usual rates for work are. Do they charge by the sheet or by the hundred words?

Read over the advertising pages of a magazine. Mark those which really make you want to buy. Try to write one just as strong.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

EMMA MCCHESENEY & Co.—*Edna Ferber*. A woman who became a successful traveling representative.

POLLY OLIVER'S PROBLEM.—A girl who learns to support herself and her mother by telling stories to children.

THE SATURDAY EVENING POST for many years has been publishing stories about young people who have succeeded in various lines by finding out some new way of doing things.

### Other Books.

LIVES OF GIRLS WHO BECAME FAMOUS.—*Sarah K. Bolton*. Full of inspiration for girls.

HEROES OF TODAY.—*Francis Parkman*. Real stories of successful persons.

BOY SCOUTS OF AMERICA.—*Business*.

STARTING IN LIFE.—*Nathaniel C. Fowler*.

CAREERS FOR OUR SONS.—*G. Williams*. Chapter XIV tells about accountants.

HELPFUL TALKS WITH GIRLS.—*Elizabeth Ketling*. Chapter XXI tells some of the advantages of the work of the librarian.

THE PRIVATE SECRETARY.—*Edward J. Kilduff*.

THE EFFICIENT SECRETARY.—*George Lane*.

CAREERS FOR WOMEN.—*Catharine Filene*. The various chapters take up different kinds of clerical work. The book should be in the school library.

## CHAPTER XVII

### HOME-MAKING AND SIMILAR OCCUPATIONS

**What a Home Is.**—The home is not only a place to eat and sleep and hang your hat; it is a place in which you live. Do not confuse the two words, house and



A GIRLS' CANNING CLUB

The girls are canning tomatoes which they raised during the summer home. Any building can be a house, but a home is made by loving care and thoughtfulness. The finest mansion may be only a house, because it lacks that love and care, whereas the tiny rough-board cabin may be a home because its occupants make it bright and happy with devotion and consideration for each other.

This chapter, therefore, is a chapter for the boy as well as for the girl. It should be read by the boys, no less than by the girls, for the boy helps in no small way to make his home, and when he grows to manhood he will share equally in home-making with the girl he marries.

Too many boys look on home-making merely as washing dishes, sweeping floors, and minding children. These duties are, of course, included in home-making, but more than this is needed to make a home.

The successful maker of a home must be skilled as financier, executive, worker, buyer, teacher, play director, judge, and artist. It may rightly be said that every occupation mentioned in this book is included in the home-maker's activities.

In the census among the so-called gainful occupations you will not find it listed, yet the maker of a home earns money for the family just as certainly as does the man who works for wages in a mill. The wife and mother receives no wages, but she is an earner just the same. Home-making ranks as the oldest and most important occupation for women, but the share of men must not be overlooked.

Home-making is not easy. People once believed that any girl was, by instinct, a good home-maker, just as every duck can swim without having to be taught. Now we know that this is quite untrue. We have seen too many homes wrecked, and too many families made unhappy because the members did not know their duties. It is as easy for a home to fail as for an untrained business man to run into bankruptcy.



A nation can be judged by the homes of its people. If a home is successful, its members will be healthy, intelligent, and progressive. They will be well-trained, self-respecting citizens, worthy to take their place in industry and government. A successful home-maker, therefore, does a very valuable service to her community.

Most occupations require skill in a few things—successful home-making requires a knowledge about many things and skill in all of them. Since a home is a democracy it requires a close knowledge and sympathetic understanding among the members of the household. Just as a business partnership is entered into only by willing consent and is run on a basis of equality for both partners, so the home is a partnership which ought to be conducted equally by both the husband and the wife.

Think over the different events that took place in your home before you came to school this morning. Just the happenings of a few hours may have involved a knowledge of many different things. The stenographer and the farmer lead very simple lives in comparison to the directors of a home.

**The Home-Maker and Finances.**—A home-maker should be a good executive and a careful manager. Among her most important duties is the making of the budget. The husband's work usually is the only source of income; the wife's work begins by coöperating with him in spending their money wisely. Even before the home is established, both husband and wife need a knowledge of houses and of neighborhoods. They

must know the comparative costs of renting or of buying a home. If they decide to buy, they study the method of purchasing a house. Money will be needed not only for furnishing the home, but also for replacing articles as they wear out. The latter time is a most important factor which many overlook. When the house is secured, and the home has been established, they must make provision for the daily costs of food, clothing, fuel, light, rent or taxes, water, ice, and laundry, recreation, charity, insurance, and information, and a score of miscellaneous expenses.



*Courtesy Philadelphia Electric Co.*

#### THE VACUUM CLEANER

The little motor does all the hard work of sweeping

**The Home-Maker an Executive.**—Besides planning for the use of the family income, the home-maker needs to plan for the use of her own time. A man or woman in business succeeds best with a definite schedule for daily duties. A home-maker often compels herself to work all day just because she does not plan and carefully observe a schedule. It is only through system that the housewife can accomplish all her tasks and still have leisure for her outside personal interests.

**Heavy Work in the Home.**—Besides her jobs as financier and manager, the home-maker needs skill in actual labor.

One of the big items in household work is cleaning, both the daily surface cleaning as well as the more thorough cleaning at stated periods. It requires more muscle than is realized by boys to sweep and dust a home, especially when heavy lifting needs to be done. It would not be at all unmanly for the thoughtful boy to lend his energy to such a task where he can show his strength.

**Purchasing Supplies for the Home.**—The purchase and preparation of food is a duty which requires much thought and time. A well-selected diet, as everyone knows, is essential to good health. A child might be fed enough to fill his stomach, and yet be under-nourished, for he may lack the proper balancing of food which is required. A cook must study dietetics in order to know what to feed to the family and how to vary the bill of fare.

Ability as a manager will be tested, for a good housewife does not have to rush to the store at the last minute for articles. She should keep an inventory of supplies as carefully as any business man. You do not call a storekeeper a very good business man if you are often told "I'm just out of that, I'll have more in tomorrow." Even in these days, when stores are handy, it is a good idea to buy supplies in fairly large quantities. This saves not only time but also money, because groceries and other supplies can be bought more cheaply in quantities.

The housewife usually plans for and purchases the clothing of the family. To do this properly she needs to read about the styles. She must know textiles in order to secure good value for her money. She will not be misled by highly colored advertisements nor by persuasive salesmen. Besides purchasing the clothing, she supervises the mending, cleaning, and pressing of clothing. Often she must make a portion, if not all, of her own and her children's clothing. For this reason she must know how to sew well.

**The Home-Maker a Teacher.**—The mother needs to be a teacher. In the home both morals and religion are taught. Sometimes children succeed better in school if their parents help them with their lessons. Parents must know how to advise their children about what school courses to select for certain occupations. At home children are taught habits of health and character building and self-control. A father or mother who says, "I want my child to be healthy, happy, useful, and good," and then does not give definite instruction along these lines is failing in a duty. Because all children cannot learn in the same way, parents should discover how to teach each individual child in order to get the desired results.

**Play Directing in the Home.**—A well rounded life is not complete without recreation. The home-maker must plan for the recreation of the family both by setting aside some money for that purpose, and by selecting the best and most suitable kinds of amusements for each member of the family. Where games are provided, boys and girls are likely to stay at home.

Many families set aside a certain amount each week to be used once a year for a vacation. This has grown to be such a custom that the banks usually have special accounts in which vacation money can be deposited.

**Other Duties.**—Nor are the functions listed above all that the skilled home-maker must possess. She must have the ability and the patience of a judge, for all the family disputes will come to her for settlement, and she must be just and fair in her decision.

Then, again, she must promote appreciation of the fine arts. Unless the love of music and art and beauty is furthered in the home it is almost impossible for the school to rouse a liking for these flowers of human culture. The home-maker must be an artist, also.

With all these duties to perform you can readily understand how difficult it is to be a good home-maker, and how necessary it will always be for men as well as women, boys as well as girls, to help. The tasks are easier, of course, if home-makers are fortunate enough to have the heavy labor taken care of by other workers than themselves. This is why it is so necessary for all the members of a family to share the routine duties.

The complexity of the home-maker's duties affords a reason why she must not allow herself to lose interest in matters of general importance. If she becomes engrossed in cleaning, sewing, and dishwashing, she will not be prepared to offer good advice in her capacity as judge, executive, financier, artist, and teacher.

Married women in the cities are beginning more and more to work outside the home, just as their husbands do. This is impossible when there are young children



in the family, but if the children are grown up, or if there are no dependents, there is no real reason why the married woman should not work if she desires to do so.

In the country, the home-maker is more likely to work outside the home, for women on farms have been



*Courtesy The Philadelphia Electric Co.*

#### THE ELECTRIC KITCHEN

Modern inventions have done much to lighten the burden of the housewife

for many generations engaged in such work as poultry raising.

Modern inventions are contributing to draw the housewife from her home. Life in apartment houses in the cities has reduced her round of duties in the home. Electric devices for cleaning, for cooking, and for sewing have made her routine easier. Little by little, the dependence of her children has been lessened

through the extension of the function of school, church, social club, and library. All these are now carrying a portion of the duties which were once part of the work of the housewife.

**Occupations Allied to Home-Making.**—The changes of our modern life have thus brought with them a series of occupations more or less related to that of the home-maker. These we will consider now, remembering always that all these callings must be understood as being part of the home-maker's own conduct of her vocation.

**The Interior Decorator.**—Not every person has either the inclination or the ability to plan the artistic features of a home. Many home-makers therefore appeal to an interior decorator for assistance, just as they employ architects to plan the building of a house. A certain budget limit is assigned by the home-maker, and for that sum the interior decorator chooses and purchases all the furnishings, from furniture and rugs to curtains and wallpaper.

Many department stores and furniture stores employ decorators who plan interiors and act as advisers for their customers. Some decorators specialize in church and school interiors. The interior decorator who establishes a reputation enjoys a good income.

This is a good occupation for the girl or boy who is tactful and who has a strong artistic bent. The high school graduate who can afford it should take a course in an art school and follow this with apprenticeship with an interior decorator who is well established.

The person who cannot afford to take an art school

course can learn by getting employment with a firm of decorators. While learning the practical work in this way, it is well to take night courses in a school in which water-color painting, design, and the history of ornament are given.

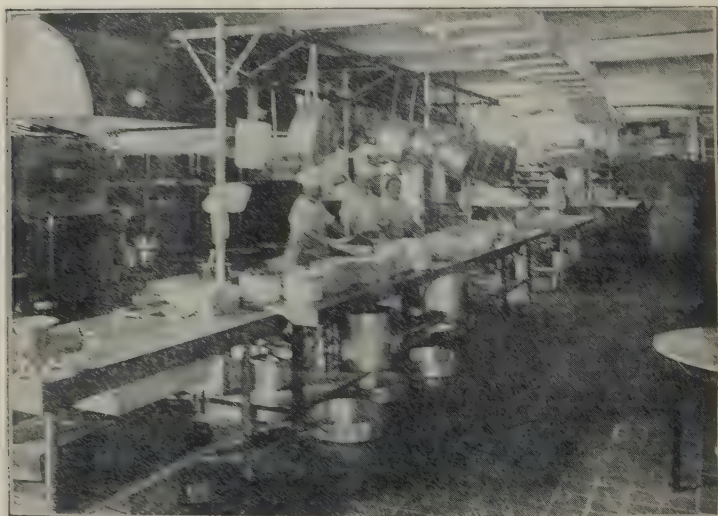
**The Hotel Business.**—It has not been very long since the only people who lived in hotels were travelers and a few bachelor boarders. All this has changed recently. Because it costs so much to keep help in their homes, many people, who can afford it, are living in hotels. Others live in apartment houses and take their meals in hotels or restaurants. There are so many automobile tourists that new hotels are being built in every town of any size to accommodate them. In many seashore and mountain resorts practically everybody who works is employed by hotel managers.

Many men and women find opportunity in hotel work because this work is growing rapidly. More efficient and better trained workers are needed now than before the prohibition law was passed. Formerly the profits from the sale of liquors were so large that it didn't make much difference whether the rest of the hotel paid expenses or not. Now that we have prohibition, the hotels must make a profit from the rooms and meals, and to do this skilled workers are needed.

Hotels are usually managed by men or women who have had years of experience in the business. In the larger hotels we find such occupations for men as waiter, cook, chef, steward, auditor, cashier, clerk, and house manager. Women are employed as maids, housekeepers, matrons, waitresses, and many of the

positions such as cashier and bookkeeper are often filled by women also.

Hotel work is not easy. The hours are long and the work requires patience, and for those who come in contact with the guests, considerable tact is required. There is plenty of opportunity for advancement or to



*Courtesy W. P. Dougherty & Sons, Inc.*

#### THE KITCHEN OF A GREAT HOTEL

At the desk in the far right-hand corner sits the head chef, the captain of the kitchen. He is entirely responsible for the operation of this highly important department

secure better positions in other hotels. Some of the workers such as chef and manager are very well paid.

The boy or girl who wants to prepare for work in a hotel should get as good an education as possible and then secure work in a hotel. The boy who wants to become a chef may have to start as a vegetable cleaner.

The girl whose ambition is to become a housekeeper may first have to get experience as a maid.

It is practically impossible to learn the hotel business except by working in the different departments. For those who wish to advance rapidly there are magazines and books to read, and some help can be gained by taking a correspondence course.

**The Restaurant Business.**—It is hard to find a village where there is not one restaurant at least. In the very small restaurants one person may do all the work of cooking, purchasing, and serving food. In large towns there are restaurants that specialize on quick service and cheap food. Others serve meals that are the finest to be had. In fact, there are some restaurants in this country whose chefs go abroad every year to learn to prepare new dishes.

Many of the occupations found in hotels, such as cashier, cook, chef, and waiter, are also found in restaurants. Restaurant work is attractive to the person who wishes to establish a business because a restaurant can be started with a small amount of capital.

As in hotel work, the boy or girl who learns the restaurant business must work in a restaurant. While getting experience it is advisable to visit other restaurants to get ideas. One very successful restaurant manager visited restaurants in every part of the country before he started his own.

**Cafeterias and Tea Rooms.**—By preparing food so that people can help themselves, better food can be served at a reasonable cost. Many people like to see the food they choose. These are the two reasons why



cafeterias were started in the West, but the idea has spread fast and now we find them everywhere, even in schools, factories, and department stores.

A good way to prepare for cafeteria work is to take the domestic science course in high school, and, if pos-



*Courtesy Drexel Institute, Philadelphia*

#### A DOMESTIC SCIENCE CLASS

Learning to be good cooks

sible, follow this with a special home economics course in college.

Tea rooms are usually operated by women and draw trade because food is served in an attractive manner. This is a good business for the girl who wants to start with a small amount of capital. To operate a tea room

successfully, one should be a good cook, and have some artistic ability as well.

**The Dietitian.**—Some people, especially those who are recovering from illness, must eat certain kinds of food. The preparing of these special dishes is done by a dietitian. Most dietitians work in hospitals, where they sometimes supervise all the kitchen, and even teach student nurses how to prepare food for invalids.

For this occupation a college education is necessary. The girl who expects to become a dietitian can start to prepare by learning to be a good cook. In special courses in dietetics she will be taught what she needs to know about food for sick people, but first of all the dietitian must be able to make food appetizing.

**Domestic Service.**—There are many opportunities for a successful and pleasant livelihood in doing domestic service. Servants in private homes, in institutions, and in hotels are always in demand. Practically all get fair wages, a good place to live, and good food to eat. After all her expenses are paid, the servant usually has more money to save than the factory worker or even the office worker. Where their employers travel, servants are often taken along and in this way are able to visit the seashore or mountains. The work is steady, and usually is more healthful than factory work or office work.

Personal service is not counted among the most desirable occupations because people foolishly look down upon the one who gives such service. Helping others is just as useful work as making things for them in factories.

To be a personal servant requires patience, tact, and perseverance. Such a person must be able to adapt herself to the desires of others and to be a close observer of human nature. It is a task that requires qualities as high as those of almost any other occupation.

**Millinery.**—Another of the occupations that has



*Courtesy "The Illustrated Milliner," N. Y.*

#### HAT TRIMMING

The expert milliner can make a good living wherever hats are worn almost been given up by the home managers is that of designing and making their own headwear. This is one of the occupations in which women can specialize to good advantage. If a girl has good taste and a fair idea of the harmony of colors and some artistic ability, there is no reason why she should not become an independent business woman by building up a business of this kind. It is not necessary that she go to a large city

for this purpose, since there is a demand everywhere for her goods.

This occupation is best learned in a shop. Many of the millinery shops take on learners, and there are almost always openings for a girl who wishes to take up this work. In the shop she will learn the details of style, fabrics, color, and design. It may be that she does not have enough ability or initiative to start a shop of her own. She can nevertheless be almost sure of steady employment if her work is satisfactory. In recent years the work has become much easier, since there are now great manufacturing plants which turn out the forms, leaving to the milliner the task of designing and placing the trimming.

**Dressmaking.**—What has just been said of millinery applies equally to the art of dressmaking. The learner needs about the same qualities and abilities. There is more room in this occupation than in the other, since it takes longer to make a dress than a hat, and the payments are somewhat larger. The dressmaker must, like the milliner, keep abreast of the styles in order that her customers may be satisfied. If she becomes skilful in sewing and fitting, she can depend upon the patterns sent out by commercial houses and still satisfy her customers. Like millinery, this trade is best learned in the shop of some dressmaker.

**Designing.**—The great rewards in both these occupations, however, come to the person who can originate satisfactory designs for hats or costumes. Designing may be learned in any good school of applied art. Many of the technical high schools in the large



cities have excellent courses in designing. If the person who has learned the art of designing does not wish to establish her own shop, the big wholesale clothing and millinery manufacturers are more than willing to employ her at a large salary to design goods for them.



*Courtesy Drexel Institute, Philadelphia*

#### A CLASS IN DESIGNING

Excellent opportunities await graduates of schools like this

Many a girl who is sure she is a second Rosa Bonheur will save herself many heartbreaking moments if she turns to costume or millinery designing instead of trying to paint bad pictures that nobody wants.

#### THINGS FOR PUPILS TO DO

Questions for discussion in class.

What are some of the things a girl ought to do to help her mother around the house? What are some of the things a boy ought to do?



What are some of the devices that make the work of the home manager easier?

Which is the harder—to manage a home in the country or to manage one in the city?

Think of some of the things that were done in the home a hundred years ago that are no longer done in the home.

Which makes the most work for a home manager, a boy or a girl?

**Problems to be studied outside of class.**

A home manager should spend one-fifth of the income for rent, one-third for food, and one-sixth for clothing. Talk things over with your mother and see how this works out in your home.

Make a list of the things the child learns in home that help him to be a good citizen when he leaves home.

Look around the home carefully, then make a list of all the things you could do to help your mother with the work of the home. Are you going to stop with making this list?

What are some of the repair jobs a man or boy can do in the home?

Ask your mother to keep a record of the number of times she must leave her work and run to the door or the telephone in a day.

Ask some hotel man what are the features of his work he likes best. If you can, ask him whether he would like to start selling liquor again.

Make a list of the advantages and disadvantages of being a servant in a private house.

Ask your father to tell you of some time when mother gave him advice that was very helpful in his business.

## BOOKS FOR PUPILS TO READ

### Stories and Fiction.

JO'S BOYS.—*Louisa M. Alcott*. The story of a woman who managed a household. It gives some of her perplexities and problems.

### Other Books.

COOKING.—*The Boy Scouts of America*. Suggests ways in which a boy may learn to cook.

FOOD FACTS FOR HOME-MAKERS.—*Harvey*. A rather advanced book which will also be found useful in domestic science classes.

VOCATIONAL EDUCATION OF GIRLS AND WOMEN.—*Albert H. Leake*. Part I tells of education for home management.

TRAINING THE GIRL.—*William A. McKeever*. Explains domestic service for girls and the dignity of this calling.

BUSINESS OF THE HOUSEHOLD.—*Clarence W. Taber*. Sets forth some of the ways of meeting household problems.

MARKETING AND HOUSEWORK MANUAL.—*S. Agnes Donham*.

PRACTICAL HOME-MAKING.—*Mabel H. Kittredge*. These two books are very helpful to any home manager.

OVER 100 WAYS TO WORK ONE'S WAY THROUGH COLLEGE.—*Thomas Francis Moran*. Page 87 tells how boys can help themselves by janitor work.

HELPFUL TALKS WITH GIRLS.—*Elizabeth Kelling*. Chapter IX tells of the problems of the boarding-house keeper.

THE GIRL AND THE JOB.—*Hoerle and Saltzberg*. Pages 73 to 76 tell how a tea room can be made successful.

WOMEN AND WORK.—*Helen M. Bennett*. Pages 240 to 243 describe the importance of training for home management.

HEMLOCK CRAFTS TODAY AND YESTERDAY.—*Florence Buchanan*.

COSTUME DESIGN AND HOME PLANNING.—*Estelle P. Izor*.

PLANNING THE FURNITURE FOR THE HOME.—*Mary J. Quinn*.

## CHAPTER XVIII

### SUMMARY CHAPTER

**Spare Time Employment.**—Some of you are working outside of school hours. If this work isn't hard on your health it will do you good, providing, of course, it doesn't take too much time away from your studies.

The money you earn will help to support you, but it will help you in another way. You will learn that it takes hard work to earn and save and you will probably spend more carefully than if the money is given to you.

Spare-time employment may assist you in choosing an occupation. If this work is not what you care to do as a permanent occupation you will be saved from the possibility of trying it later when it would be more difficult to change. On the other hand, you may like your work well enough to stay at it. Many boys, particularly those who work in drug and other kinds of stores, learn that they like such work and later get training that will enable them to make a good living at it.

By working outside of school hours you will learn that you cannot stop just because you are tired or lack interest. You will also find that outside of school things are done right, or they must be done again. There is no 60 per cent, or 70 per cent, or 75 per cent as a passing grade.

A job that occupies your spare time helps you to form the habit of work. Very few of us are naturally industrious, but by starting early we can form the habit of industry that will make work easier as we grow older.

**Full Time Work Not Advisable Now.**—Although it is well to do some work while attending school it probably will not be advisable for you to stop school to go to work.

If you were to go to work today, what kind of job would you get? Very likely you would do unskilled work that has no future to it. Jobs without a future are called “blind alley” jobs. After a few years in a “blind alley” job the young man or woman finds that the pay is too low to support a family. This is because boys or girls just out of school are able and willing to do the same work for less money.

What is there for the person who quits a “blind alley” job? Unless he has prepared himself for something better by going to school or by study at home during his spare hours, he must do unskilled work. Now, everyone who does unskilled work is doing a real service, but such work should be done by persons who have no opportunity to do greater service.

Many boys and girls leave school thinking that they will work for a while and return to school later. You know how difficult it was to start to study in September when you came back to school. It will be much more difficult if you stay out of school for a year or longer.

Some boys and girls quit school thinking that it will be easy to get places where they can learn trades. Such

places are not always easy to get and unless the boy or girl is old enough to do the heavier work there isn't much chance even to work as a helper. If you are determined to learn a trade by serving an apprenticeship, by all means stay in school until you are sure of a job in a place where you can really learn. If your trade is one that is learned by the helper method, wait until you are old enough to do the heavy work required. Boys and girls who aren't grown up are not of much use as plumber's helpers, or student nurses, or blacksmith's helpers.

If you go to work when you are too young, you are more likely to be injured than if you wait until you are older. Boys and girls are more careless than older persons and take more chances with danger. Many accidents occur to persons because they are tired. This makes injury to young workers more probable because they tire more quickly than older persons.

By studying in school you may lengthen your working years on account of having better health. Many jobs open to boys and girls are indoor jobs that aren't good for the health. Or perhaps the work may be too heavy. You need all the strength you have to grow into a healthy adult. Work that is too hard makes you grow old quickly.

The longer you stay in school, the better are your chances for promotion as you get older. You will find that in order to win promotion it will be necessary to study even after you leave school. The better your education is, the easier it will be for you to study after you leave school. There are two reasons for this. You



can acquire the habit of study in school. This habit makes it easy for you to continue to study. Your education will also help you to understand better what you read. This will save you from being discouraged when you strike something hard. Most people do not complete correspondence courses because they cannot understand the instructions and become disheartened and quit.

**Why Continue to Study?**—You may think that, when you leave school, your education is complete. The fact is that it has just begun. Your school training makes it possible for you to study after leaving school. It is easier to remember what you learn by experience or what others tell you, but why should you neglect the information contained in books? It is generally more reliable than what other workers may tell you.

By reading you can learn what other workers in your occupation are doing. Practically every occupation and profession has a magazine that prints the news of that occupation, just as the newspaper prints news of general interest.

Keep on studying and don't bother about promotion. When you have studied and made yourself ready for more responsibility, promotion will come to you.

**Your Wages.**—You have heard some people complain about not being paid as much as they are worth. Did you ever stop to think that an employer cannot pay you as much as you are worth to him? One reason why your employer cannot pay you what you earn is that it costs money to employ you. You may have heard of the term "labor turnover." By this we mean the

constant hiring and discharge of workers. Men are taken on to fill a certain job, but after they have worked a little while, they prove unsatisfactory, or quit because they do not like the work. Each time a new employee comes, it costs a large amount to train him. In most industries this cost ranges from fifty to several hundred dollars for each man. In one year a certain company hired 3000 different men who failed to keep their jobs. The cost of "breaking in" these men had to be added to the selling price of the articles which the company was selling.

As we have seen, some factories have a personnel worker who tries to reduce the turnover by hiring men and women who are suited to the vacant places, or by transferring them to other kinds of work where they can succeed better. Thus the employer, the workman, and the general public each profit more. Young boys and girls are particularly likely to drift from one job to another, unless they know definitely what they want to do. This is one great reason for you to study occupations. People who like their occupations are not likely to drift from one job to another.

Another reason why your employer cannot pay you all that you earn is this. He must pay someone to tell you what to do, and to see that you do it right. This foreman's wages must come out of the profit from the work of all the persons he directs. When you can work without being told what to do and when no one has to see that your work is right, you will be worth more money. Your employer will then pay you more, for if he does not, other employers are always looking

for such workers and are willing to pay well for their services.

Finally, your employer must make a profit for himself. He is in business to make profits. If he does not make a profit out of your work, he might as well sell out his business and work for someone else.

What are you doing today that will help you to go higher up?

Begin now to build a ladder upon which you can climb to those heights of success which you desire.

While you are preparing for your vocation and planning, do not forget that your job does not occupy all your life. Each day of 24 hours may be divided roughly into thirds: one-third for work, one-third for sleep, one-third for your recreation, your meals, your traveling to and from your place of work. But while your job fails to take all your time you can see that it fills the largest portion of your waking hours.

Some days now seem long to you, while others race by so quickly. Some studies you call easy, and the time devoted to them flies rapidly, while other subjects drag on slowly. You will understand, then, why it is so necessary for you to choose an occupation which you enjoy. You will not succeed in any other kind of work.

The whole purpose of this volume is to assist you to make your choice. No one can make it for you, although older people may lend you valuable assistance. You alone know best. When you have surveyed the field of occupation and discovered the work which seems most pleasing, prepare yourself with all your might.

Then when you enter on your life work, be efficient, alert, and progressive. Thus you can grow into leadership, extend your influence, and make yourself a citizen of whom America may boast.

### THINGS FOR PUPILS TO DO

Questions for discussion in class.

Why should a man earn more than he receives? What are some of the things that must be done with these extra earnings?

Give some reasons why a newly employed store clerk is less useful to the merchant than one who has been in the store for several years. Why cannot a man do a full day's work for the first few days in a machine shop?

If you were an errand boy in a dry goods store, what are some of the things you ought to study if you want to be promoted? If you were the filing clerk in a lawyer's office?

Problems to be studied outside of class.

Find out as many reasons as you can why people leave one job for another. Which reason seems to be given the most frequently?

What kinds of work are being done by the pupils of your school outside of school hours?

Which pupils are making better marks, those who are working outside of school hours, or those who are not working?

If you personally know of some worker who took courses in a correspondence school, try to find out in what ways he was benefited by this study.

If you are acquainted with somebody who teaches in night school, find out what he thinks of the pupils and their attitude toward the school work.

### BOOKS FOR PUPILS TO READ

Many of the books already suggested contain material that might well be reviewed at this time. Some of their introductory chapters are very helpful. Of the books mentioned

below, most of them are too difficult to place in the hands of the pupil. The teacher can, however, use them to good advantage in preparing the concluding lessons in this subject.

ELEMENTARY ECONOMICS.—*Thomas N. Carver.*

ELEMENTARY ECONOMICS.—*Frank T. Carlton.* These two books each have a chapter or section devoted to the subject of Distribution, that is, the assignment of shares of the product to the factory of production.

AMERICAN PROBLEMS.—*Burch and Patterson.* There are several chapters on poverty, its causes and remedies.

THE WORKER AND HIS WORK.—*Stella S. Center.*

THOUGHTS ON BUSINESS.—*W. P. Warren.*



## APPENDIX

These Appendices may be used by the teacher as a source of material for problems, original graphs, and general reference.

### APPENDIX I

#### MEN KILLED IN COAL-MINING

<i>Year</i>	<i>Men Employed</i>	<i>Men Killed</i>	<i>Tons Produced for Each Man Killed</i>
1907.....	680,492	2242	147,407
1912.....	722,662	2419	220,945
1917.....	757,317	2696	241,618
1922.....	848,932	1971	233,576

### APPENDIX II

#### MANUFACTURING IN THE UNITED STATES

<i>Year</i>	<i>Number of Factories</i>	<i>Number of Wage Earners</i>	<i>Wages Paid</i>	<i>Value of Product</i>
1849....	123,025	957,059	\$236,755,464	\$1,019,106,616
1859....	140,433	1,311,346	378,878,966	1,855,861,676
1869....	252,148	2,053,996	620,467,474	3,385,860,354
1879....	253,852	2,732,595	947,953,795	5,369,579,191
1889....	355,405	4,251,535	1,891,219,696	9,372,378,843
1899....	512,191	5,306,143	2,320,938,168	13,000,149,159

The figures above include one-man shops. The figures below include factories only.

1899....	207,514	4,712,763	\$2,008,361,119	\$11,406,926,701
1909....	268,491	6,615,046	3,427,037,884	20,672,051,800
1919....	290,105	9,096,372	10,533,400,340	62,418,078,773

## APPENDIX III

## WHY BUSINESS CONCERNS FAIL

<i>Reason</i>	<i>1918</i>	<i>1919</i>	<i>1920</i>	<i>1921</i>	<i>1922</i>
Fault of Proprietor.....	86.0%	85.9%	83.1%	74.8%	76.8%
Not Fault of Proprietor.....	14.0%	14.1%	16.9%	25.2%	23.2%

## APPENDIX IV

Of each thousand children in the United States 10 to 15 years of age, the following numbers are employed as shown in the different states:

<i>State</i>	<i>All Who Work</i>	<i>Work on Farms</i>	<i>State</i>	<i>All Who Work</i>	<i>Work on Farms</i>
Alabama.....	241	221	Nebraska.....	34	20
Arizona.....	71	52	Nevada.....	25	6
Arkansas.....	185	176	New Hampshire	33	5
California.....	30	6	New Jersey....	76	3
Colorado.....	43	19	New Mexico....	46	30
Connecticut...	81	4	New York.....	47	30
Delaware.....	59	17	North Carolina.	166	135
District of Columbia.....	53	0	North Dakota..	32	27
Florida.....	88	57	Ohio.....	30	6
Georgia.....	208	180	Oklahoma.....	79	68
Idaho.....	29	20	Oregon.....	30	8
Illinois.....	53	8	Pennsylvania..	56	6
Indiana.....	52	15	Rhode Island..	134	2
Iowa.....	34	15	South Carolina.	244	219
Kansas.....	34	18	South Dakota..	33	25
Kentucky.....	84	66	Tennessee.....	123	100
Louisiana.....	125	92	Texas.....	126	107
Maine.....	31	10	Utah.....	39	24
Massachusetts.	86	2	Vermont.....	33	13
Maryland.....	75	19	Virginia.....	82	50
Michigan.....	34	9	Washington....	34	7
Minnesota.....	30	17	West Virginia..	39	21
Missouri.....	57	24	Wyoming.....	30	15
Montana.....	23	11	United States		
			Total.....	85	52

## APPENDIX V

The amount of food consumed in the United States by families for the years indicated. The amount is in pounds except where indicated otherwise:

<i>Kind of Food</i>	<i>1901</i>	<i>1919</i>
Sirloin Steak.....	70	32
Round Steak.....	70	32
Rib Roast.....	70	31
Chuck Roast.....	70	31
Plate Beef.....	70	23
Pork Chops.....	114	36
Bacon.....	55	17
Ham.....	55	22
Hens.....	68	23
Lard.....	84	34
Eggs (dozens).....	85	61
Bread.....	253	531
Flour.....	454	264
Butter.....	117	66
Potatoes.....	882	704
Milk (quarts).....	355	337
Coffee.....	47	40
Tea.....	11	8

In these tables in the Appendices, the figures are for the United States Census of 1920, except where otherwise indicated.

## APPENDIX VI

## VALUE OF MINE AND QUARRY PRODUCTS

<i>Year</i>	<i>Metals</i>	<i>Non-Metals</i>	<i>Others and Total</i>
1902.....	\$604,517,000	\$722,434,000	\$1,327,951,000
1907.....	904,108,000	1,165,376,000	2,069,570,000
1912.....	862,008,000	1,375,420,000	2,237,794,000
1917.....	2,086,234,000	2,900,462,000	4,992,496,000
1922.....	985,800,000	3,662,500,000	4,652,000,000

## APPENDIX VII

Some of the various Vocations and the numbers of persons engaged in each in the United States:

Actors.....	28,361	Housekeepers.....	221,612
Architects.....	18,185	Laborers, Agricultural.....	4,041,627
Barbers.....	216,211	Laborers, Building Trades.....	686,722
Bankers, Brokers..	161,613	Laborers, Food....	159,535
Bakers.....	97,940	Laborers, Lumber, etc.....	320,613
Boarding-House Keepers.....	133,392	Laborers, Iron, Steel.....	729,613
Bookkeepers.....	734,688	Machinists.....	801,901
Builders, Contractors.....	90,109	Masons, Brick and Stone.....	131,264
Carpenters.....	887,379	Molders, Metal....	123,681
Clerks not in Stores	1,487,905	Musicians.....	130,265
Cooks.....	398,475	Miners, Coal.....	733,936
Clergymen.....	127,270	Painters, Glaziers..	323,032
Compositors, Printers.....	140,165	Physicians.....	144,977
College Professors..	33,407	Plumbers.....	206,718
Dentists.....	56,152	Salesmen, Stores...	1,177,494
Dressmakers.....	235,855	Servants.....	1,270,946
Conductors, Rail way.....	74,539	Stenographers.....	615,154
Conductors, Trolley.....	63,760	Teachers.....	761,766
Farmers.....	6,201,261	Waiters.....	228,985
Gardeners, Florists	169,399	Washerwomen....	396,756

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